The Commercial Car Journal

VOLUME XXIV PHILADELPHIA, FEBRUARY 15, 1923 NUMBER 6

The 1923 Good Roads Show

Biggest Exhibit of Its Kind Reveals the Important Part the Automotive Industry Plays in the Construction and Maintenance of America's Highways

By ALBERT G. METZ

WITH a billion-dollar road program contemplated, exhibitors at the Fourteenth National Good Roads Show at the Coliseum in Chicago, January 15-19, left no stone unturned to place before the visiting road-building contractors and highway engineers all the information, facts and figures they could produce bearing on the economy and serviceability of the machines and materials they had to offer.

This road show found a host of exhibitors who actually knew their products from A to Z and who lost no opportunity to have their exhibits in action wherever the machine or apparatus exhibited permitted such a procedure.

It was a show with atmosphere and local color. One could not help but feel impressed with the fact that road-building machinery is now produced in great variety and for specific uses, so that both speed and economy can be obtained.

The road machinery manufacturer should thank the automotive industry—for where has not the motor truck and the tractor helped to speed up the building of American roads!

A feature of this show which forcibly impressed itself upon the writer was that road building in this country has been completely motorized. Not a machine of any character was exhibited, with the exception of two huge steam-operated clam-shell buckets, that did not depend upon either trucks or tractors or automotive engines for power to operate them. That the highway contractor is no longer interested in horse-drawn equipment of any kind, was shown by the absence of all such apparatus at this show.

Over 200 exhibits were crowded into the Coliseum, the Annex and the Greer Building. At that many exhibitors were forced to accept reductions in space. This is evidence that road building has become one of the most important activities of the country and that manufacturers of road-building machinery are doing their part to produce machinery and equipment which will adequately and economically meet every requirement of the road builder.

The exhibits included everything from delicate surveying instruments to immense concrete mixers that devoured a truck load of aggregates at a time; huge excavators that bite their way through earth embankments in record breaking time; paving machines that completely lay and finish the road as they move along on steel tracks; all kinds of machinery used on large road construction projects, and the smaller machinery used principally for maintenance work, including small mixers, graders, road marking apparatus, drags for dirt and gravel roads, and so on.

The Automotive Exhibits

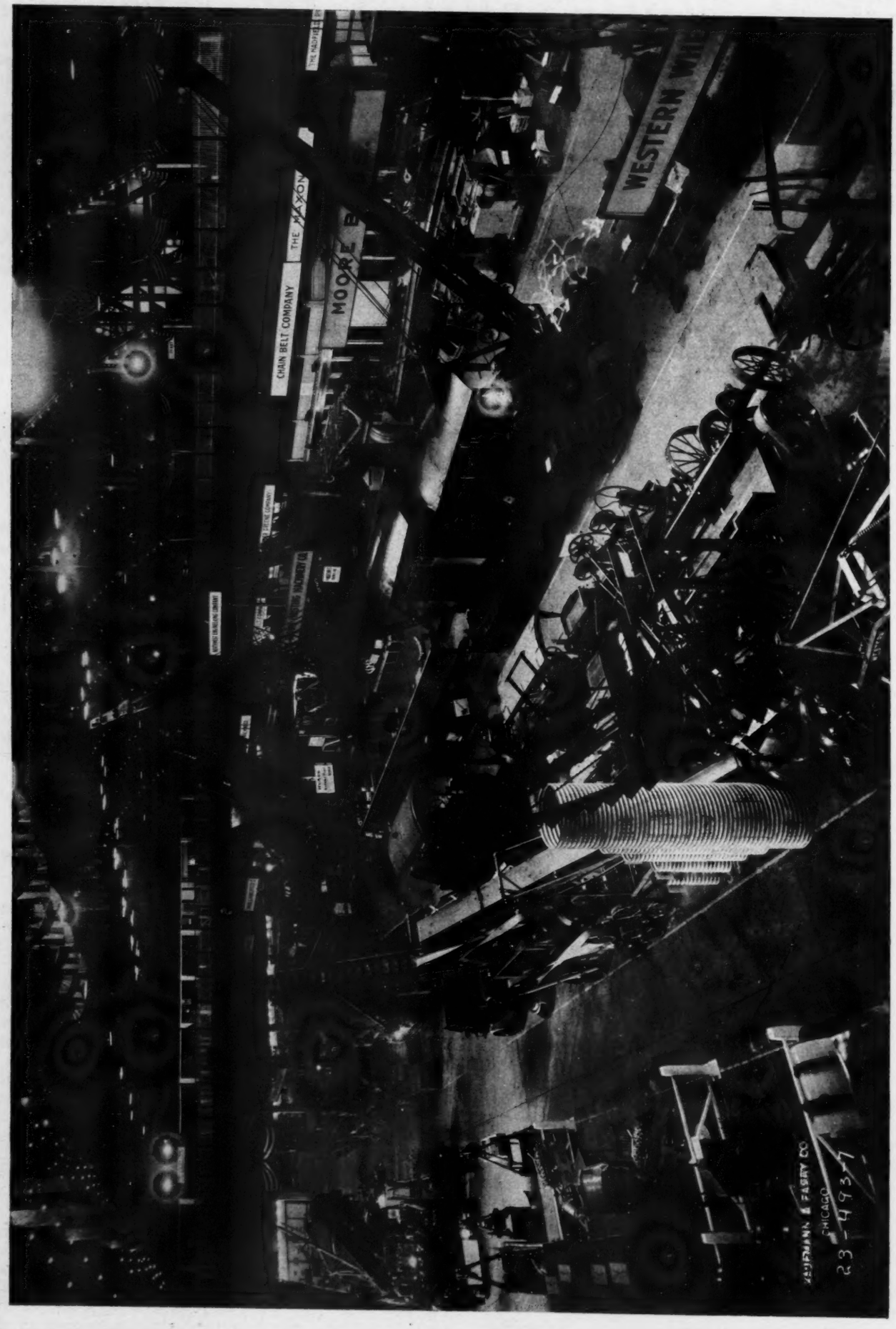
A road machinery exhibit would not be complete these days without showing of trucks, tractors, trailers, dump bodies, hoists, etc., because these are all part and parcel of the highway contractor's equipment. These huge concrete mixers and road-building machines would not be able to prove their economy were it not for motor trucks and automotive engines which supply the material and the motive power for keeping these machines in maximum operation.

Among the truck manufacturers who exhibited trucks especially equipped with hoists and dump bodies, were the following: Autocar, Sterling, Mack, Federal, Four-Wheel Drive, Titan, GMC, Greer, Kelly-Springfield, Indiana, O'Connell, Super, Stoughton, Watson, White and the Hug. The last named built by the Hug Company, of Highland, Ill., is a new job designed especially for contractors' use by C. J. Hug, an experienced road builder. Details of this job appear elsewhere in this issue.

One of the interesting features of the show was the extent to which small working models were employed. Clam-shell buckets, turntables, belt conveyors, road scrapers, etc., in miniature, afforded the salesmen an opportunity to clearly demonstrate the operation of such devices in a most convincing manner.

Gasoline engine manufacturers played an important part at the show not alone in showing with their own product but also in the application of their particular models in the many complete apparati shown. In other words, among the gasoline locomotives, motor trucks, stationary power plants, air-compressors and portable pumping apparatus, one found many of the products of engine builders whose names are legion to the automotive man. Among the individual engine exhibits were included the following: Buda, Climax, Beaver, Waukesha, Hercules, Novo, Wisconsin, LeRoi, Minneapolis Steel and Machinery Co., Fairbanks, Morse & Co., and the Wellman-Seaver-Morgan Co. The latter is described elsewhere in this issue.

Hoists were shown by Borg & Beck, Heil, Wood Hydraulic, Van Dorn, etc. Practically all the hoist manufacturers had electric motor driven demonstrators in their exhibits so that the actual operation of the



The Good Roads Show Which Was Held in the Coliseum at Chicago, January 15th to 19th

hoisting mechanism in conjunction with dump bodies could be visualized. The Byers Machine Co. of Ravenna, O., showed the Truckrane, which is designed for mounting complete on a motor truck chassis. This device has been described in the September, 1922, issue of this publication.

Dump bodies were shown by Archer, Heil, Lee, Wood, Watson, while such well known concerns as Link-Belt, Lakewood Engineering, Haiss, Brown Hoist, etc., showed loading apparatus of all sizes.

Gasoline locomotives were shown by Fate-Root-Heath Company, Milwaukee Locomotive Mfg. Co., Lakewood Engineering Co., while Avery, Monarch, Holt, Moline, Best, Bear, Bates and Shaw-Enochs were among the tractor exhibits. Trailers were shown by Highway, Lee, Monarch, Watson, etc.

Many Fordson tractors were shown in connection with special road maintenance machinery. Crawler attachments and other specially designed fixtures were much in evidence, while a number of road maintenance machines revealed the clever application of the Fordson power plant as the motive power.

Only one tire company exhibited, the Overman Cushion Tire Co., which showed its well-known Overman cushion tires.

Other exhibits which created a great deal of comment and attention were the exhibits of the highway departments of the States of Wisconsin, New Jersey, North Carolina, etc., and the exhibits of the Asphalt Association, the Portland Cement Association, the National Association of Paving Brick Manufacturers, the Association of Pennsylvania Highway Contractors and last but most interesting of all, the exhibit of the U. S. Bureau of Public Roads.

The latter exhibit covered more than 2000 sq. ft. of floor space and included a complete line-up of testing apparatus employed by the bureau in testing various kinds of road material as well as the completed road. Dozens of models or roads and bridges of various types were shown. Motion pictures were shown all day long of actual road construction, in connection with Federal-aid projects.

One of the features of this exhibit was a large model more than 20 ft. in length of the type of road the Bureau is building in the National forests. This model was not alone a work of art, but it gave mute evidence to many of the visiting road builders that road building in the mountainous district offers very many problems not encountered anywhere else in the United States.

What the Good Roads Show Means to the Truck Industry

THE Good Roads Show at Chicago is in all respects a consumers' show, because it is seen by the men who are actually in the market for material with which to carry on their business, namely, road building.

It is not the purpose of this article to dwell on the reasons why motor truck manufacturers should exhibit at this show. That's a question which every truck manufacturer must decide for himself.

Some truck manufacturers are interested in the road building business sufficiently to produce special models to meet the requirements of this work. Road building calls for the most severe service of any in which motor trucks are employed. Many truck chassis which are admirably fitted for transportation work between railroad terminals and warehouses or in retail delivery work are unsuited for the road building contractor. The truck he wants must be able to stand an unusual amount of rough handling and punishment. Gear and axle ratios are important factors, and the engine must be sturdy and of sufficient power to pull the load though almost regardless of road condition. At the same time the truck must have speed—when those big concrete mixers begin functioning they must be kept going.

Speed and System Are Fundamentals

Everything in road work must be handled with dispatch and system. The most reliable road construction machinery isn't worth a nickel to the contractor if his trucks are continually breaking down and holding up the operation.

In other words, the purchasing of the motor truck is just as important a consideration in the mind of the contractor as is the purchase of his road scraper, concrete mixer, barrows and what not.

The importance which the contractor places upon his transportation equipment is best shown by the paragraph following, which is excerpted from an address delivered by Chas. H. Fry, president of the Chas. H. Fry Construction Co., Erie, Pa.

> "When the contractor finds himself in the market for the purchase of transportation equipment, without a doubt, he finds himself dealing with the most complex problem of road building. To arrive at any conclusion he must consider so many details that in the end he generally feels that he has reached only the experimental stage. There is a constant and inviting incentive to obtain the best results. In touching some of the major problems consider first the investment. **The expenditure for any type of hauling equipment is the largest item of the contractor's plant.** This fact alone should cause the contractor to choose the most flexible equipment."

The word picture we have endeavored to paint for the motor truck manufacturer in the foregoing paragraphs, we hope will cause those truck manufacturers who are contemplating the construction of trucks for road building, to carefully consider the requirements of this particular field.

The wise truck manufacturer realizes that as the truck industry grows, more and more importance must be laid on the necessity of designing trucks for a specific kind of work. Specialization will be the keynote of the successful manufacturer in this industry. We will find concerns who will specialize in certain lines and not attempt to build models for every known business that has use for trucks.

Manufacturers might do a bigger and more profitable business if they would study the requirements of a certain few industries and build trucks to exactly meet those requirements.

Which brings us to the point that the manufacturer who expects to capitalize on the present and future road building activities in this country must closely study the needs of the highway builder.

To the truck manufacturer and the equipment manufacturer who is thinking and exerting his efforts along such lines, the Good Roads Show had a significant meaning. It showed him road building has reached greater proportions than ever before, that road building machinery manufacturers are looking forward to ever-increasing activities, and last, but most important of all, that our past efforts at road building are but a "drop in the bucket" compared with the road building which must be done in this country in the years to come.

New Equipment Needed

Directly after the war, the U. S. Bureau of Public Roads distributed a great deal of surplus war material to the various state highway departments. This material included road-building machinery, equipment, motor trucks, automobiles and supplies of various character. In all, about $140,000,000 worth of various material was distributed up to June 30, 1922. Some

of this material has been in constant use for the past few years and as the average life of motor trucks and road-building equipment is not over two years, it stands to reason that a great deal of this equipment will shortly have to be replaced.

There is another angle to this which must not be overlooked. A great deal of the Army material which is in the various State Highway Departments is not suited particularly for the maintenance work which the Highway Departments are doing and must of necessity be scrapped sooner or later to make room for trucks and equipment that are more economical for the job.

As a means of securing new outlets for their products, the automotive manufacturers who attended this show expressed themselves as well pleased with the results. Especially is this evident among the engine manufacturers who are confident that the steam engine will soon be entirely replaced by the gasoline engine in connection with the use of industrial and road-building machinery.

What some of the exhibitors think of the Good Roads Show is well expressed in the following paragraphs:

"To us, this Road Show this year particularly will be productive of very good results for those exhibiting at the show. In our own case, we have booked a number of new accounts and are lining up with a number of other companies, and we feel that as a direct result of this show it will mean a considerable volume of new business in new fields for this company. I say new fields, but meaning an expansion of some of the types of installations that we have had for the past few years.

"The one outstanding feature of this show was the fact that in all the bucket cranes that were shown, there were only two that were steam operated, the balance being operated by gasoline engines, and it is indicative of the progress that is being made by the gasoline automotive type engine not only primarily by use in passenger and commercial vehicles demanding better roads, but also in their usefulness in building new roads, and it is the feeling of the writer that within another two years practically only gasoline-powered vehicles will be used for the building of the good roads of this country, and that steam and other types of equipment will be eliminated by reason of their high cost of operation as compared with the gasoline-driven units."—J. P. Mahoney, sales manager, THE BUDA COMPANY.

"The Good Roads Show was very profitable for us and we more than doubled the number of our industrial accounts.

"The Good Roads Show is like the motor car shows of ten years ago and there appears to be a rapid growth in the use of gasoline engines for use on road machinery. Steam is rapidly disappearing for it is definitely proven that a road builder can buy a new engine every year and be way ahead. In actual service we have had engines run three years or 5,000 hours without overhauling and this means an immense saving to contractors. Standardization is taking place and we find there are machinery houses who handle eight lines of machinery with Waukesha engines: Trucks, tractors, air compressors, concrete mixers, ditch diggers, traveling cranes, drag line outfits, pumps, etc."—H. L. Horning, secretary and general manager, WAUKESHA MOTOR COMPANY.

"As an exhibitor of parts which go to make up the complete industrial unit, we, of course, do not look for many direct sales resulting from our exhibit. We do, however, attach great importance to this Good Roads Show and do not hesitate to say that this year's show was in every respect an excellent one. There is only one drawback which could be remedied, that is that the building employed is not adequate for the needs of exhibitors of industrial equipment and parts makers. This Good Roads Show is worthy of the best that can be had, and in writer's opinion will become the outstanding event in the industrial world. Our experience has been that people who attend this show are there for a purpose, and that purpose is to learn more about the various kinds of industrial equipment and the parts that go to make up a complete unit. There were no visitors at our booth who were not primarily there to get facts and data on the Wisconsin industrial line.

The Good Roads Show should grow in importance every year, and we wish to express the hope that every manufacturer will be given a chance to show to better advantage by improving housing conditions. The writer estimates that close to 50 per cent of the exhibitors hail from Wisconsin, so as a suggestion, why not bring this show to Milwaukee?—H. M. Cronk, sales manager, WISCONSIN MOTOR MANUFACTURING CO.

"We are glad to say that from an exhibitor's standpoint, this was the most successful Road Show ever held.

The interest in Climax engines was very gratifying, and it might be worthy of mention that we obtained five new industrial accounts at this show."—T. L. Keeling, assistant sales manager, CLIMAX ENGINEERING CO.

"We were pleased with the results obtained by us at the Good Roads Show. The salesmen at our exhibit came in touch with a large number of logical truck prospects, as well as some truck prospects that will buy heavy duty motor truck equipment in the near future, and while it is impossible for us to tell just what the actual net results will be, we feel that we have been repaid for going to the trouble and expense of displaying Indiana road building trucks at the Good Roads Show."—E. A. Kightlinger, sales manager INDIANA TRUCK CORPORATION.

"It has been our experience that very few sales are made at these shows but that the foundation is laid for a good many sales during the balance of the year.

It was the writer's observation that practically every visitor at the show was not merely a spectator, but was either an immediate or remote prospect, and judging from the questions asked and the class of men in attendance to this show, we are looking forward to some wonderful results."—E. L. Moorman, sales manager, HIGHWAY TRAILER COMPANY.

"We believe that the Good Roads Show from our point of view was a wonderful success.

We exhibited at the show our Archer-One-Bag Concrete Mixer mounted on the Ford one-ton truck and there was not only a great deal of interest displayed in the outfit, but we received quite a few orders at the show as well as obtaining a list of contractors and city officials who are greatly interested in this outfit."—A. T. Scannell, general manager, ARCHER IRON WORKS.

"The 1923 Good Roads Show was an entire success as far as the Bear Tractor is concerned. There was good attendance of real prospects, both among distributors and users. There was never a time when there were not a goodly number of interested visitors at the Bear booths. And the very encouraging thing about the exhibition was the fact that the men who inspected the Bear tractor had a very keen appreciation of its unusual design and high quality.

The amount of business actually closed was very satisfactory, but of more importance is the fact that the Bear salesmen are feeling the good influence of the show exhibit since returning to their territories. The show proved conclusively that men doing street and road construction and maintenance are literally demanding more tractor efficiency, and are intensely interested in a tractor that will do the job at least cost."—BEAR TRACTORS, INC.

"We believe this was the most profitable show we ever attended, not from orders which came to us, but from the number of people who were interested in our product, all of which leads one to believe that this year will be a very busy year for those who sell contractors' equipment.—Howard A. Winton, advertising manager, THE HEIL CO.

"The 1923 National Good Roads Show was of particular interest to us and we are exceptionally well pleased with the results obtained from our exhibition of the Hug Speed Truck.

As this year promises to be the greatest era of good road building in American history, many truck sales will be made during the next few months to contractors engaged in the building of roads The trucks which endure the severe tests on this work are worthy of recognition."—A. L. Sautter, treasurer, THE HUG CO.

"We did not expect, nor did we obtain any actual sales of our engine, but we did have a large number of good prospects, and we anticipate receiving orders for our engines, in the near future, due entirely to the advertising obtained at the Roads Show."—Geo. B. Church, motor division, THE WELLMAN-SEAVER-MORGAN CO.

"Never in history has the Chicago Coliseum housed such an array of machinery for the manufacture of goods and durable highways as was its privilege last month. And never has the machinery on display disclosed such development or shown such great strides toward improvement and perfection.

We displayed for the first time the Link Belt Crawler Crane, a new member of that rapidly expanding family. In addition to the "coming out party," for the Crawler Crane, we exhibited the One-Man Power Swiveling Industrial Leader.

We are entirely satisfied with the outcome of our efforts throughout the week. In addition to the several sales that were made, the list of prospects developed was extremely valuable."—S. L. Haines, LINK BELT COMPANY.

Highway Building Equipment is Used for a Two-Fold Purpose. In Winter Time This Atterbury Keeps the Highways Open in the Town of Tonawanda, N. Y.

The Importance of Good Roads to the Truck Dealer

MOTOR truck dealers who visited the Good Roads Show, talked to contractors from all parts of the country, heard the addresses made during the convention by highway engineers and others intimately connected with the business of road building, will agree that this, the country's greatest enterprise today will contribute most directly and indirectly to the prosperity of the motor truck industry.

To begin with, we wish to impress the dealer with the fact that the road-building program of this country entails one of the greatest undertakings of any nation in the world. When we consider that this country's area is over 300,000,000 square miles, and compare it with countries such as Germany with about 208,700 square miles, and France with an area of about 212,650 square miles, we will realize that this is a gigantic problem. The whole of France could be placed within the state of Texas and we would still have about 60,000 square miles remaining. We cannot, therefore, be governed by what European countries have done in road building.

Our road-building program has only begun. It was only since the war that the importance of good highways has been appreciated. When the tremendous overland movement of motor trucks was in progress, many roads which were considered adequate for years to come were found to be entirely unsuited to withstand the increased traffic they had to bear. Many state roads which were considered the latest thing in road construction were literally "shot to pieces." This situation was unquestionably the greatest incentive to awaken the public's mind to the necessity of more permanent roads, and more especially the linking up of state roads.

Although the original Federal-aid Road Act was approved in July, 1916, and $75,000,000 was appropriated for good roads, to be spent over a period of five years, this sum was totally inadequate, but—it was the first real effort made to build roads on a systematic basis.

Federal Liberality Shows Recognition

After the close of the war, $200,000,000 more was appropriated by Congress, and the new act under which this sum was granted, placed a more liberal interpretation upon the term "rural post roads" so that it practically countenanced the granting of Federal Aid to the construction of any road necessary for the proper development of any section. The $10,000 limitation upon Federal participation was increased to $20,000 per mile, because of the greatly diminished purchasing value of the dollar.

Inadequate transportation facilities and strikes, however, delayed the prosecution of the work, but it gave more time to fully consider the problems which such a huge road-building program entailed.

It was not, therefore, until 1921 that this country entered its first real road-building year. At the same time various states launched bond issues which together with the Federal-aid appropriations exceeded the sum of $600,000,000 to be spent for road building.

On November 9, 1921, President Harding signed what is known as the Federal Highway Act. Instead of permitting Federal-aid funds to be used on any road which carried or might in the future carry the mails, this new act provided that the Federal-aid appropriations were to be applied only to a limited system of main interstate and intercounty roads which it directed the Secretary of Agriculture and the State Highway Departments to select in co-operation. This system, which is know as the Federal-aid Highway System, is to consist of not more than 7 per cent of the total mileage of road existing in each state on the date of the passage of the Act. Not more than three-sevenths of the roads are to be primary highways of interstate importance, the remainder being secondary roads or roads of intercounty importance. Taken together, however, both classes represent the main roads of the country. And this year we find that the total appropriations from various sources will total over $800,000,000. The Federal-aid program alone contemplates the building of 180,000 miles of improved roads. About one eighth part of this mileage has been completed so far—to be exact, 23,291 miles were completed as of November 30, 1922.

How Road Money is to be Disbursed

From a bulletin issued by the American Road Builders' Association during the Good Roads Show, We quote the following paragraphs which will give the reader a clearer idea of what money is to be spent under the provisions of recent legislature:

> "The Post Office Appropriation Act for the fiscal year 1923 made the most recent amendment to the legislation. It reduced the limit of $20,000 a mile to $16,250 for the current fiscal year and to $15,000 thereafter, and authorized the appropriation of an additional $50,000,000 for the current fiscal year, $65,000,000 for the fiscal year ending July 1, 1924, and $75,000,000 for the following fiscal year. None. of these amounts has been appropriated, but the Secretary of Agriculture was authorized to incur indebtedness against the authorization of $50,000,000 for this year.
>
> "The total amount that has been appropriated by all Acts up to and including the current fiscal year is $400,000,000, of which $388,625,000 has been apportioned among the states, the balance having been deducted for administrative expenses. Of this amount, $326,952,264 has been obligated for the construction of definite projects by the states up to December 1, and of the unobligated balance of $61,672,736, $48,750,000 did not become available until last July.
>
> "On December 1 the mileage that had been completed since the passage of the first Act stood at 23,291 miles. The fact that the completed mileage had increased by 5,575 miles since the first of July shows how necessary it is to associate this figure carefully with its date. On the same date the projects which remained under construction totaled 14,518 miles which, in the aggregate, were reported as 58 per cent completed. Since the same date last year 11,538 miles have been completed."

All the foregoing takes into consideration mostly, the building of new roads. It does not take into consideration the fact that maintenance of roads must be considered of as much importance as the original construction.

When the Federal-aid and state programs are completed, we will have about 500,000 miles of hard surface roads, and these also need maintenance. But about 75 per cent of our roads which are of earth, gravel and similar type of construction need constant maintenance to keep them in shape for the ever increasing traffic they will be called upon to bear.

Millions of dollars are being and must be spent in the maintenance of roads and it is in this connection that the truck dealer will find a great outlet for his product. This is especially true in such communities where gravel and earth roads are in the majority. Gravel roads need refilling and earth roads need constant dragging. Some contractors and highway departments use trucks for dragging, but the majority use tractors. The thing for the dealer to find out is just what is being done in his own territory and then dope out a plan by which he can save money for either the contractor or state highway department by applying his truck for the work in hand.

To get his share of the truck and equipment business out of the road-building activities, the dealer necessarily must study the subject. And he will perhaps be surprised to learn that the average contractor will place a great deal of confidence in the dealer who knows the operating costs of his trucks accurately.

Contractors Are Big Repeat Prospects

The large general contracting concerns are large repeat order buyers. Furthermore, the dealer should find this class of buyer easier to sell on a short term basis. In this respect it may be well to mention that in the road machinery field, the custom is to pay on a 90-day basis.

The contractor as a rule is used to paying for his road-building machinery within three months' time. Why then cannot the truck dealer take advantage of this custom?

There is also an opportunity for the dealer to increase his profits by selling the smaller units of road machinery equipment. Many of the road-building machinery manufacturers who build large

concrete mixers, road drags, bucket cranes, etc., also build a line of smaller units which can readily be handled by the motor truck dealer. Many of these smaller units are used in side walk, bridge and culvert construction—also for road maintenance work. A number of exhibitors at the Good Roads Show expressed themselves to the effect "that the motor truck dealer could very readily handle some of the smaller road-building equipment in connection with his truck line and make a handsome profit thereon."

But, aside from the sale made in the road-building field—the truck and passenger car dealer should be the greatest booster for good roads in his community.

All the dealer needs to do is to check up the development which results from the opening up of a new stretch of highway. Immediately prosperity becomes noticeable. If the highway runs through farm lands, the farmers along the route soon vie with each other in promoting neatness in their road fences and farm buildings. The farmer's land increases in value. If the farmer can reach the city or nearby town more readily, he will soon be raising food products which he will sell direct to the city dwellers at a more satisfactory price to both. If not already, he comes a real motor truck prospect.

Real estate operations begin to blossom. This means that the lumber and building trades get more business and they in turn will need more trucks. The automobile tourist travel which comes as the result of a new road or a properly maintained road creates the need for garages and service stations. New communities are born as the result of improvement in highways, all of which reacts to the benefit of the truck dealer. It is the dealer in the smaller community who should be a leader in highway building activities. He should study the highway builders' problems and be able to give him cost figures that are beyond dispute. Such a dealer will not only find the contractor a good customer, but he will be doing his community a real service.

A. E. S. A. Holds Annual Convention During Chicago Show Week

MEMBERS of the Automotive Electric Service Association, which has among its objects the promotion of a co-operative spirit among its members, raising the standard of service, co-operating with the manufacturer of electric equipment and encouraging the use of only genuine parts for replacement service, convened at Chicago, January 30 and 31. Authorized service representatives from all sections of the country and Canada were present, the Pacific coast being well represented.

The Right Service Station Idea

President P. J. Durham, New York, opened the convention, and said in part, "The authorized electric service station has become a well known institution in most of the cities and towns of the country, and has accomplished much. But it can accomplish much more in the future if it is remembered that **primarily and fundamentally the function of the service station is to give service of exceptional quality.** Not including exclusive battery stations, there are approximately 1500 authorized service stations. The majority represent two or more manufacturers, and it has been proven that the product of several manufacturers can be serviced in a proper manner by one concern.

Room for Improvement

"There is much to be done in improving our service, and a realization of the fact will clear the atmosphere and enable us to make some progress. We may all feel quite sure that the service we offer, individually, is the very best that is, and feel satisfied that it is beyond criticism, but if the majority of the millions of car owners are having their electrical repairs made by car dealers and independent shops, we can hardly be satisfied with our service. Gentlemen, do not leave your repairs entirely in the hands of your employes while you busy yourself with merchandising. There is danger of undermining the foundation of the electrical service station business if our service can be bettered or even duplicated in outside shops. This year we hope to establish a closer contact by holding several section meetings in different parts of the country, which will make the work more interesting. Remember there is only one way to make the association work of great value to use all, and that is for each member to assist by contributing some idea or thought of value for the development of the business."

Harry R. Cobleigh, secretary of service, N. A. C. C., was the principal speaker of the morning session and spoke on the "Possibilities For Better Service Through Service Associations." J. E. Shank, representing the Electric Auto-Lite Company, spoke in place of C. O. Miniger, president of the company, who was unable to be present.

The flat-rate system also came up for discussion. Upon vote a committee was appointed to study the flat rate system and submit a report.

Specialized Electrical Service

L. E. Murray read a paper on "Specialized Electrical Service," and he brought out many points of interest to the members. The presentation of tabulated data secured from the questionnaires sent out by the association was in the form of a huge banner and the data was very interesting. Five questions were asked of the car and truck dealer, all relating to the servicing of electrical equipment. Two are of particular interest in that they showed the attitude of the dealers towards official electric service stations. By an overwhelming majority the dealers went on record in favor of the service rendered by the authorized service stations, and not in favor of handling the work themselves. A showing of the North East film concluded the first day of the convention.

Wednesday morning was a closed meeting at which the election of officers and a board of governors took place. The board was increased from 9 to 15, and the following members will serve another year: D. W. Burke, Auto Electric & Service Corp., Detroit; F. W. Duffeck, Electric Power Maintenance Co., Toledo; H. A. Lines, New Haven Electric Co., New Haven, Conn.; Gordon Prentice, Sunset Electric Co., Seattle; C. T. Stevens, Reinhard Bros. Co., Minneapolis; R. R. Thomas, Electric Equipment Co., Los Angeles.

The new members are: H. F. Bush, Auto Equipment & Service Co., Philadelphia; E. S. Cowie, E. S. Cowie Electric Co., Kansas City, Arthur Jones, Arthur Jones Electric Co., Chicago; H. B. Noyes, Auto Electric & Radio Co., Omaha; Adolph Wagner, H. T. Electric Co., Indianapolis, Mr. Ewing, Birmingham Electric Battery Co., Birmingham, Ala.; Mr. Bechtol, Cleveland Ignition Co., Cleveland; Ernest Ingold, Automotive Service Agency, San Francisco, and Mr. Faguay, International Electric Co., Montreal. P. J. Durham, retiring president, was automatically elected to the board.

D. W. Burke, Auto Electric & Service Corp., Detroit, was chosen to head the association for the ensuing year. The new president has been one of the livest wires and a very active worker in association matters. P. J. Durham, P. J. Durham Co., Inc., New York City, was persuaded to accept the office as secretary and he is another who has devoted considerable time in furthering the interests of the association. Arthur Jones was selected as vice-president, and F. W. Duffeck as treasurer.

Joint Meeting With Producers

Wednesday afternoon was given over to a joint meeting with the manufacturers. Among the subjects discussed was that of using rewound armatures in place of new ones. The manufacturers, and some members, contended that the owner was better served by the use of a new armature. The rewinding contingent held that if an armature was properly rewound it gave satisfactory service at a considerable less cost to the owner. It appeared that the cost factor dominated insofar as the owner was concerned, and it was suggested that if it were possible for the manufacturer to supply a new unit at less cost it would aid in solving the problem.

Prospects for 1923 in the Commercial Car Industry

By J. H. COLLINS, Manager Commercial Survey Department, CHILTON COMPANY

PRESENT indications suggest that 1923 will be the most profitable year ever experienced by the commercial car industry, with the possible exception of the boom period of 1920. Even so, however, the industry appears to be running well behind its normal market, and while production during the coming months will be substantially greater than during the past year, the development of the national market is not proceeding at as rapid a pace as basic industrial and economic conditions should warrant. In other words, while the outlook is good, students of the industry believe that it should be even better, and real prosperity will come only with intelligent and systematic development of the national market.

Factory Capacity Versus Factory Output

First let us consider the relations now existing between factory capacity and actual production.

If we make a rough estimate, we may tentatively place the productive capacity available for commercial cars in 1922 at 380,000. Available capacity in 1923 will not be appreciably greater.

If we assume that this basis is fairly accurate, the commercial car industry built to 63 per cent of capacity in 1922, and probably will turn out about 70 per cent to 72 per cent of capacity in 1923.

There has been no undue expansion in plant facilities for turning out commercial cars, and we do not believe that a warning against temporary over-production for commercial cars is at all justified at this time. Sales and output of commercial cars this year will probably be more evenly balanced than in the passenger car field.

We now come to a consideration of the anticipated demand for commercial cars this year.

Commercial Cars Needed in 1923

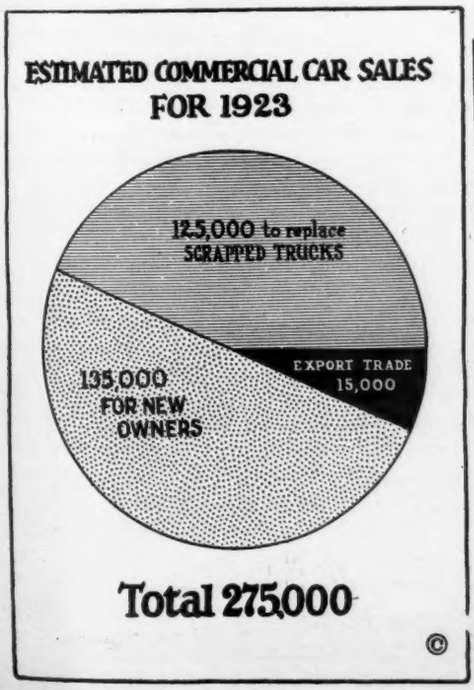
The percentage of trucks required for replacement is not quite so large as in the passenger car field. Approximately 125,000 commercial cars should be replaced during the coming twelve months if business conditions continue on a fairly even keel. If we study past sales records, we can anticipate a demand for about 135,000 trucks for so-called "new owners"; about 15,000 trucks probably will suffice for the export trade. This brings the total estimated requirements for 1923 to about 275,000 commercial cars.

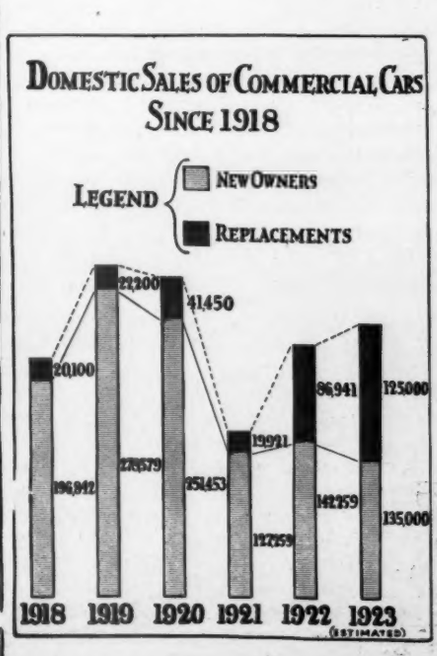
These estimates, of course, must only be tentative. General business prosperity, our international relations, the buying power of our rural population, and a dozen other factors will modify, or change materially, any preliminary estimate we may make.

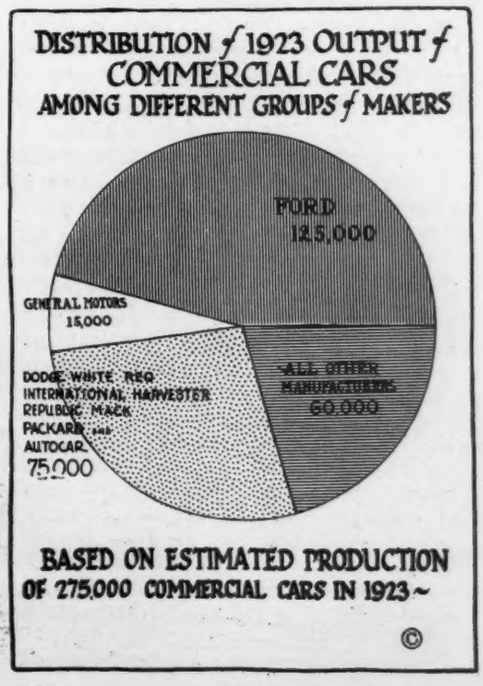
The "New Owner" Market

A chart dividing sales each year into two classifications, "new owners" and "replacement," gives us a rough working basis for estimating the number of new owners entering the field each year.

We know that there has been a comparatively steady increase in the number of trucks required for replacement since 1918. The greatest increase in total registrations dates back to 1919, when out of a production of 300,779 trucks sold for domestic use, 278,579 went to new owners, and 22,200 for replacing worn out trucks. Since that time the number of new owners, measured by increases in registration totals, has varied with changing industrial conditions, reaching






DISTRIBUTION of 1923 OUTPUT of COMMERCIAL CARS AMONG DIFFERENT GROUPS of MAKERS
FORD 125,000
GENERAL MOTORS 15,000
ALL OTHER MANUFACTURERS 60,000
DODGE, WHITE, REO, INTERNATIONAL HARVESTER, REPUBLIC, MACK, PACKARD, and AUTOCAR 75,000
BASED ON ESTIMATED PRODUCTION OF 275,000 COMMERCIAL CARS IN 1923
©

its lowest point in 1921 due to abnormally low production, and increasing somewhat in 1922. On the face of matters it appears that about 135,000 will represent the net increase in registration totals during the coming year. The degree of industrial activity, the trend of prices, and numerous other influences affect sales to new owners. Our estimate for 1923 is offered simply as a reasonable working basis on which we may build up our preliminary estimates of total sales.

A discussion of sales totals naturally brings us to a study of anticipated production by different groups of makers.

Production of Trucks by Different Groups of Makers

If we assume that our suggested output of 275,000 commercial cars for 1923 is approximately correct, we can count on Ford for about 125,000 of these. General Motors may turn out about 15,000. A group of leading truck companies, consisting of Dodge, White, Reo, International Harvester, Republic, Mack, Packard, and Autocar, should collectively build about 75,000. This leaves a total production of only about 60,000 for all other truck makers.

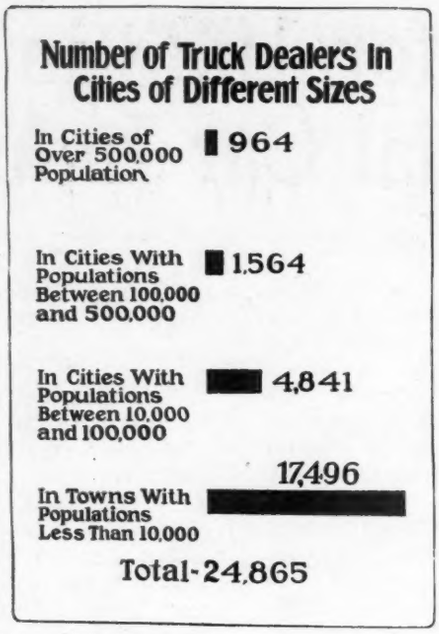
Last year we called attention to the concentration of production in the hands of a few strong companies. The outlook for 1923 suggests that the process of concentration is continuing. This continued concentration of production is still one of the noteworthy features of motor vehicle manufacture.

The Small Town and Rural Market

There are 24,865 truck dealers in the United States. Of these, 964 are in cities of over 500,000 population, 1,546 are in cities with populations between 100,000 and 500,000, 4,841 are in cities with populations between 10,000 and 100,000, while 17,514 are in cities with populations of less than 10,000. We do not have registration figures showing the number of trucks registered in these cities and towns of different sizes. We do know, however, that in the passenger car field more than half of all cars registered are in rural districts and in towns under 10,000 population, and it is safe to assume that a very substantial percentage of truck registrations are likewise outside of the principal cities.

Truck sales and service facilities must necessarily go hand in hand. Latest records show that there are 63,000 automobile and motor truck service stations in the United States. Of these, 6,150 are in cities of over 500,000 population, 6,850 are in cities between 100,000 and 500,000, 13,000 are in cities between 10,000 and 100,000 population, while 37,00 are in towns having a population less than 10,000. We know the trucks of different types and sizes gravitate toward their natural markets just as water seeks its own level. Making due allowance for these normal variations, we are still forced to the conclusion that the national market outside of the cities not only has substantially supported the commercial car industry in the past but promises to continue as the mainstay of that industry in the future.

Intensive cultivation of what we may term "the small town market" may prove to be the most effective factor for sales expansion in 1923.


Number of Truck Dealers In Cities of Different Sizes
In Cities of Over 500,000 Population
964
In Cities With Populations Between 100,000 and 500,000
1,564
In Cities With Populations Between 10,000 and 100,000
4,841
In Towns With Populations Less Than 10,000
17,496
Total-24,865

Truck Service Facilities

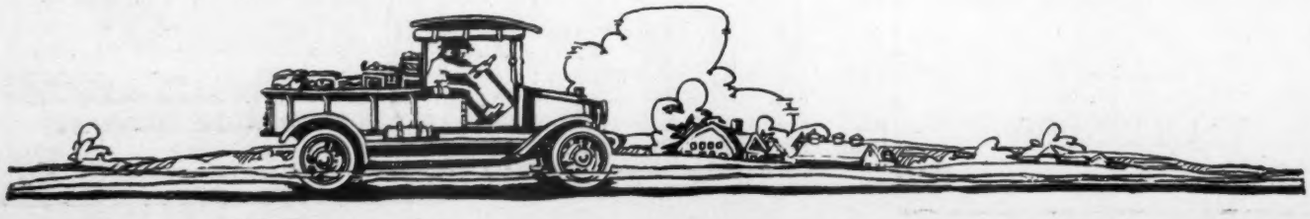
If we study the character of car and truck service in the United States we find that of the total of 63,000 service stations of all sorts mentioned above, 17,500 are offering service for passenger cars exclusively, 43,000 offer service to both cars and trucks, and 2,500 service trucks exclusively. Hence there are 45,500 truck service stations in America, good, bad, and indifferent. About 40 per cent of these are operated by dealers and may be considered as having reasonable equipment. On the whole, therefore, service facilities are, if anything, ahead of sales. We must admit that truck sales in some instances may have been hindered by lack of local service facilities, but considering the country as a whole, sales can be extended appreciably without overtaxing present facilities for service.

The Big Problem of the Industry

The industry's greatest problem is the intelligent development of the national market. The motor truck is basically a utility and must necessarily be merchandised as such. Real sales potentialities can be realized only when the industry appreciates the importance of intensive market analysis and its application to sales. There are signs that the leaders in the industry appreciate the fact that new markets can be developed only in proportion to the understanding of those markets, and that steps will be taken shortly to sell the idea of truck transportation to those divisions of our industrial and agricultural enterprises that have not as yet seen the need for motorized service.

While sales in 1923 undoubtedly will reach a satisfactory volume, the most optimistic feature of the outlook at this time has to do with those plans which are slowly maturing for the systematic promotion of truck sales to those divisions of the market which have not yet been touched.

The motor truck industry is very obviously still in the period of early development.



How Can Manufacturers and Dealers Co-operate to Make Truck Paper More Attractive to Bankers?

The problem of merchandising motor vehicles has become so closely related to the problem of financing sales made on the deferred payment plan, that one cannot be considered without taking into account the other.

It is stated on good authority, that banking and financing organizations of the country must absorb yearly over $250,000,000 in truck paper eminating from deferred payment sales. The subject is, therefore, a very pertinent one at this time as motor truck paper is, at present, in bad repute with bankers, and to a large extent with finance companies.

Extracts of Address Delivered by HENRY FARMER, of Farmer & Ochs, of New York City, Before the Motor Truck Conference, at the National Automobile Chamber of Commerce, January 11, 1923

THE objectionable features to truck paper, from a banking standpoint, appear to me to be as follows:

1st. Weak Purchasers.
2nd. Weak Dealers.
3rd. Long Term Paper.
4th. Lack of Co-operation by Manufacturers.

I have mentioned as the first objection "Weak Purchasers" because I believe the banks first consider the maker of the notes. A large percentage of motor trucks sold on time are purchased by men with little financial responsibility. The merchant who buys a truck for use in his own business almost invariably proves to be a good risk, but a large number of trucks are sold to truckmen and contracting concerns who have little or no net worth beyond the down payment. Their future payments are entirely contingent upon prospective earnings. If their collections are slow or they are unable to get employment for the trucks, their notes remain unpaid and go to protest, and if the business does not develop as anticipated it is necessary to repossess the trucks. This all results in a large volume of past due notes which makes a poor impression on the banker and causes prejudice against the paper as a class. **If the dealers would adhere to the rule of insisting on a sufficient down payment,** a great deal of this trouble would be eliminated, but the tendency is to sell on a smaller margin, **taking supplementary notes for the difference.** The bank or finance company has no way of determining this fact as their notes and mortgage are according to requirements, but almost invariably such **forced deals result in long deferred payments or repossession.**

The second objection, "Weak Dealers," is from a banking standpoint quite as important as the Weak Purchaser. Manufacturers, due to very keen competition, the necessity for representation in certain districts, and their desire to increase production, have appointed dealers without giving due consideration to their financial or moral responsibility. Perhaps this laxity on their part has been largely due to the fact that they have realized the banks and finance companies were ultimately "holding the bag." In many cases dealers who have proven themselves to be absolutely dishonest and unreliable with one manufacturer, have been able to secure a contract with another manufacturer with little or no trouble. But even the honest dealer has often not been a good risk for the bank, because his financial standing has not been such as to enable him to take care of the obligations assumed in the business; his assets are largely tied up in second-hand trucks and his profit has, in the past, been to a great extent consumed in overhead expense and in the floor plan financing charges which he has been compelled to pay before the truck was sold. When a dealer finds himself in this position he begins to make irregular sales in the attempt to save the situation, but as the result of such sales he becomes still further involved. **Weak Dealers breed Weak Purchasers.** Therefore the Weak Dealer's endorsement has been of little value to the bank except as an incentive to his prodding the purchaser for the payment of the notes. With Weak Purchasers and Weak Dealers the banks can hardly be criticized for their reluctance to handle the paper.

Long Term Paper Third Objection

The third objection, "Long Term Paper," is one that can only be corrected to a limited extent. Commercial paper maturing beyond a period of three to six months is not looked upon with favor by banks, but practically all are willing to handle a limited amount of twelve months paper if the security behind the notes is good. There is, however, a tendency to extend the term of payment to eighteen and by some to twenty and twenty-four months, and this practically makes the paper unbankable except perhaps as collateral to the short-term note of a strong maker such as a factory or finance company.

The fourth objection, "Lack of Co-operation by Manufacturers," is one not always appreciated by banks until they have had an unfortunate experience in the handling of truck paper. Banks which have handled this business are skeptical as to the real value of the collateral underlying motor truck paper. Their experience in marketing repossessed trucks has shown that the value was what they could get for them. There has been little or no effort on the part of the manufacturers to assist banks or finance companies in disposing of trucks which have been repossessed by them, and without a sales organization the banks have been compelled to accept what was usually offered by a second-hand dealer, who in turn would market the truck at a price which would have permitted the bank to liquidate without loss. It would seem that the manufacturers have overlooked the fact that the sale of their trucks has been contingent upon the financing of the time paper and have not recognized that to encourage future business it is necessary to assist those who have financed the sales in the past.

If these reasons are sufficient to justify the banks in their attitude towards truck paper, what can be done to correct the situation? My suggestions would be as follows:

1st. As regards Weak Purchasers. The manufacturers should endeavor to give some supervision to the sales of their dealers, especially those who are seeking finance arrangements, **with the idea of preventing sales to purchasers who have no means beyond the original down payment.** They should explain to the dealers the folly of selling without a sufficient down payment, and point out the inevitable result of such sales. The dealers should also be impressed with the importance of **making a thorough investigation of the purchaser** and the wisdom of refusing to sell unless such investigation is satisfactory in every way. We have had transactions offered to us where the credit

investigation has shown that the prospective purchaser has served a jail sentence and in many cases the men have been out on bail. This would indicate either a total lack of investigation on the part of the dealer or an inclination on his part to take a gamble. A stricter supervision of credits and insistence on proper down payment would undoubtedly curtail sales for a while, but eventually it would attract into the trucking business, men of responsibility and character because they would find that they were able to get a fair return for their capital and adequate compensation for their labor. It is the man who has made an insufficient down payment and, who has little to lose, who is responsible usually for the underbidding on a contract and who makes it impossible for the legitimate truckman to exist. * * *

Investigate Before Appointing

2nd. The appointment of Weak Dealers. The manufacturers should not appoint dealers without thoroughly investigating them, and should refuse absolutely to have any business relations with a dealer whose record is not clean. I believe it would be well if there were a committee of the manufacturers to which could be reported dealers who had been dishonest in any way, and before the appointment of any dealer inquiry should be made by the manufacturer, of that committee. Such information would also be of great assistance to the banks and finance companies. Dealers should not be appointed who have an inadequate or no financial standing, even if their reputation is good. The capital of many dealers is entirely tied up in trade allowances and they have no liquid assets with which to conduct their business. Before appointing a dealer the manufacturer should determine that the dealer has sufficient capital to take care of a normal trade-in inventory and a surplus with which to conduct his business properly. While the question of trade-ins is foreign to the subject which has been assigned to me, I should just like to remark that it is my opinion that **until some plan is devised for correcting the trade-in evil,** it is going to be difficult to much improve the character of the paper from a banking standpoint, even if the other remedies suggested herein are accomplished, and I believe that the manufacturers should at once put forth every effort to solve this problem. Manufacturers should give greater supervision to the business methods of their dealers. **Many dealers can sell trucks but they have no knowledge of how to run a business. These men need advice along the lines of properly organizing their sales, service and accounting departments.** If the dealers were convinced of the importance of having their customers' notes paid promptly, they would undoubtedly install a system of following up these notes and seeing that they were paid on the due date, which would materially improve the paper from a banking standpoint. The dealers should be impressed with the importance of meeting their endorsements promptly. Perhaps their laxity in this matter, at present, is due to their financial condition, but many dealers appear to think it quite in order to allow the notes, if unpaid by the purchaser, to be protested and returned to the finance company, they relying on the collection from the purchaser before they really make good their endorsement.

3rd. Long Term Paper. **The manufacturers should attempt to discourage the selling of trucks on a long term basis.** While the eighteen months paper on heavy duty trucks might at times pay out better than twelve months paper, there is an inclination to extend it to the smaller models, for which there can be no excuse. The factory branches seem to be pioneers in this practice and are extending the period in some cases, I am told, to twenty and twenty-four months, and it is apparently not the weak factories that are doing this, for they cannot finance the paper. Surely the larger factories should not encourage such unsound practices.

4th. Lack of Co-operation by Manufacturers.. The manufacturers should cooperate with the banks in the resale of repossessed trucks whether or not they are endorsers on the notes. They have the facilities for reconditioning and reselling the trucks, which no bank or finance company can have, and I know of no better way of making truck paper more attractive to banks and finance companies **than for the manufacturer to assist in securing a fair market price for repossessed trucks.** If the truck has been properly sold in the beginning it should bring the amount of the unpaid notes if properly remarketed after repossession. In this way the trucks will be kept out of the hands of the so-called "Gyps" and in time a staple resale value of trucks will be established.

How to Make Paper More Attractive

From the banking standpoint I realize that these suggestions would not eliminate all the undesirable features, but they would at least help. Under our plan of financing automobile paper we have endeavored to assist the dealers and factories in making their paper more attractive to the banks, and for the benefit of those here who are not familiar with our plan, I shall attempt to outline it very briefly.

The plan primarily contemplates putting the dealer in a position to finance through his local bank by means of a surety company bond guaranteeing the payment of the notes to the bank. This bond removes all question on the part of the bank as to the security of the collateral. The bank does not even have to concern itself as to whether or not the lien instrument is valid or whether the truck has been insured, or the responsibility of the maker or endorser, as the bond is an absolute guarantee to pay if the maker and endorser fail so to do. In order to secure such a bond the dealer purchases from his bank a certificate of deposit payable to the surety company, for 10 per cent of the amount of the notes, and this certificate of deposit acts as a compensating balance to the bank for the loan and also as collateral to the surety company. The cost is 2 per cent per annum on the amount of the notes, which includes a coverage protecting the dealer against conversion of the truck by the purchaser. Where the dealer prefers to send the paper to us for discount rather than handle it through his local bank, we make an additional charge of 1 per cent per annum on the amount of the notes, making the total charge, if discounted by us, 3 per cent. We have found quite an inclination on the part of the dealers to send their paper to us rather than discount it through their local banks, and we believe that this is partially due to the fact that they follow the line of least resistance, and also because they have, in some cases, direct loans with the bank and feel that this would be asking for additional accommodation. The banks should consider this paper separate and apart from their regular loans to the dealers, for they are really buying securities at a rate of interest which they are unable to obtain on other paper of equal value. * * *

Absorb Finance Charge in List Price

It is my opinon that the finance charge should be absorbed by the manufacturer in the list price of the truck. A dealer has no greater sales resistance today than a finance charge, for he invariably has a competitor (usually a factory branch) which makes no such charge and it is difficult to convince the purchaser that he is getting some value for this charge. This often leads the dealer to irregular practices to equalize the transaction. Our charge is so small that if applied to the list price of all trucks sold by a factory it could be worked down to possibly 1 per cent or 1½ per cent on the list.

I have spoken previously of the lack of co-operation in the past on the part of manufacturers in connection with the resale of trucks. We believe we have overcome this somewhat in our plan of financing as we require a factory participation equal to 10 per cent of the amount of the notes. Either the factory executes an agreement guaranteeing us against loss for an amount equal to 10 per cent of the amount of the notes financed during a period of twelve months for their dealers, or they agree to allow the dealer, in the purchase of parts and new trucks, credit for the 10 per cent which is withheld by us as a certificate of deposit.

Up to the present time we have confined our activities in the finance business to motor truck paper, believing that we were more needed in that field than in the passenger car.

We believe also that your committee could probably be of considerable assistance to us in advising as to the manufacturers who are conducting their business along legitimate lines. We have refused contracts with some manufacturers because we have felt that there was not a demand for their product and that they could not succeed. On the other hand we have made contracts with some of the weaker factories believing that there was a legitimate demand for their product and that their financial condition was a result of business conditions beyond their control. In other words we are ready to cooperate with you along the same lines which we understand the parts manufacturers are now doing.

How to Lower Service Costs

Do You Know to What Extent and Importance Time and Labor-Saving Equipment and Tools Ultimately Bear on the Minimum Cost and Efficiency of Your Service Station? Modern Practice and Procedure Invites More Profit and Customers. Read Why Today Sales Fail in Their Only Objective

By C. P. SHATTUCK

THIS publication has for some time past advocated lower maintenance costs, pointing out that sales resistance, particularly where repeat orders are involved, would be materially decreased. But how are lower costs in service to be brought about?

The answer is found in analyzing factory production methods, which means the elimination of waste movement and the use of machinery and equipment with which to speed up production.

Right here the truck service manager will argue that there is no similarity between original factory or production assembly work and repair work such as handled by the service station. This is true to a certain, limited extent. Naturally, new parts are more readily assembled than those which are worn, damaged or abused, but the writer ventures to say that any truck or unit factory could rebuild a worn assembly much faster and cheaper than the dealer's service station. Certainly an engine plant could replace worn parts cheaper than the dealer service station. But let's eliminate the advantage an engine manufacturer would have on parts costs and view the subject from the labor and tool equipment angle.

Generally the factory mechanic is better compensated than the service station mechanic, because the average factory assembler works on a piece basis and has an incentive which the service station mechanic has not. We grant that the factory assembler is an operation man specializing in certain assembly operations and, therefore, has an advantage over the service station mechanic, but eliminating this factor and considering the equipment element we find that the average truck dealer's service station has not made the progress that service requires in the matter **of time and labor-saving equipment and tools.**

Lack of Equipment is Noticeable

A number of specific repair operations could be discussed to bring out the point but one will suffice to show that the average truck service station is not properly equipped. Take the subject of relining brakes. Here we have a series of operations involved.

The average shop performs this work on a time and material basis. A record is usually kept of the mechanic's time and the quantity of material employed. The result in hours will vary quite widely on the same model of truck, not because one workman may work faster than another or because of frozen nuts or bolts, but **because the methods employed are those which we used 15 years ago.** In other words, the tools and equipment comprise a jack, vise, cold chisel, punch, cutters and a hammer, all involving labor expensive to the customer.

It is true that the customer who paid say $25 for having the service brakes relined in 1920 may havev been charged $30 the following year and more the next or vice versa. The analytical owner may discover that the same job has varied in cost. Of course we must consider the condition the brake assembly is in and the variables in labor and overhead but it is believed that the cost per hour has been somewhat reduced since the war period and if it has not then there is reason to believe that something is wrong with the management.

The writer made an investigation of brake service costs in the passenger car field and finds that they have been gradually decreased since the days of high wages to the mechanics. There have been two factors responsible for lower costs and the most important of these is the installation of equipment which obviates hand labor. The next in order is paying the mechanic on a flat rate basis.

Independents Exploiting the Field

The development of brake service is not confined alone to the car dealer but to many independent repair shops which are merchandising brake service on the flat-rate basis. And this is not done by the large city shop alone, but can be found in the small places. For example, within 20 miles of New York City there is a small suburban town with a population of approximately 25,000. Statistics show that there are nearly 2,200 passenger cars and trucks in this town, all having dealer representation and some form of service.

In this town there is a garage which maintains an excellent repair shop well equipped with machinery and tools. For some time past the newspaper in this town carried fairly well displayed advertising of this garage calling attention to a flat-rate service on various standard operations. Recently the same firm began an advertising campaign to exploit its HIGH SPEED BRAKE SERVICE with flat rates and guaranteed work. The copy named 21 different makes of passenger cars, also the models by year and prices renewing the service and emergency brakes separately and together. Prices included several makes of trucks. An interesting feature is that the price for both brakes is about 25 per cent less in proportion than that of one set.

This shop, like many others, makes a series of time studies on the various models and then arrives at its prices by checking the average time. The overhead and cost are figured in and a percentage added for profit. The prices are reasonable, due to the fact that time and labor-saving tools are used wherever possible. Among this equipment is found a special brake lining machine developed by the manufacturer of the brake lining, which, by the way, is prominently named in the advertisement. It is because of this machine that the time factor is materially reduced and more accurate work accomplished than by the old hand methods.

More Profit and Customers

Here then, is an example of how more work can be accomplished in the shop and how the cost to the truck owner can be reduced. This shop is making a greater profit because it is now handling more brake lining business. Furthermore the advertising campaign plus the service is attracting a new clientele to the shop, and this is an asset of great value.

The writer knows that the average service station manager of the truck dealer is capable of analyzing the value of time and labor-saving tools and equipment and can plan their use so that production will be increased with the resultant decreased cost to the owner and greater returns on the service investment. But the fly in the ointment is that too many service station managers either are not able to sell the boss or have not approached him in the right way. Many truck dealers today are reluctant to spend much money on their service stations for they argue that sales do not warrant it. Therefore, too many service station managers hesitate to suggest new investments and others fear to.

Can Dealers be Sold

The problem of selling the dealer is not without its solution. To bring to his attention the need of the right kind

of equipment will require more than the effort service writers have made. This is but educational. Factories can help, but as a rule the dealer resents being told by the factory how he should spend his money. The writer believes that **the solution of the problem lies in the hands of the makers of service station tools and equipment. They must sell the dealer.**

By sell is not meant the usual presentation of the glittering generalities, but rather a **real selling appeal based on cost facts.** The average dealer can be sold if the equipment manufacturer will make an analysis of the service station, prepare data dealing with costs and then present the case to the dealer in the **only terms he understands—costs and profits.**

If the manufacturer can prove conclusively to the dealer that a brake lining machine, for example, will for a reasonable investment enable the service station to supply cheaper maintenance costs to the customer, and at the same time insure a greater profit and increase sales, then the dealer will listen and can be sold. Consideration must, of course, be givven to the service head, but the service manager who will not give any tool or device a fair trial and recommend it if it is practical, has no call to head a service department and will not eventually.

Why Sales Fail of Objective

The writer was asked recently by a maker of service station equipment why his sales force had not made the progress in the truck field it had in the passenger car industry. This maker complained that the truck dealer did not respond as readily to circularization as the passenger car dealer. Inasmuch as this manufacturer is broad minded, he obtained the reply he sought and that was "that circularization was not effective and that if the money spent for it were to be invested in a well-planned dealer educational advertising campaign with a follow-up by special salesmen who could analyze service conditions and show the dealer the device on a cost and profit basis, that sales would be accomplished." This maker replied that the truck dealers are hard boiled eggs and that his salesmen report they cannot interest the dealer, but that the service manager is interested.

In analyzing the sales methods employed and checking up the same among some dealers, it was found by the writer that the salesmen had employed conventional selling methods. In no instance was it found that the acid test—costs—had been applied. This is not intended as a criticism of the salesmen. The fault lies with the manufacturer. Service station equipment can and will be sold in large volume to the truck dealer, but volume will be attained only when real selling methods are employed. Keen competition will eventually compel the truck dealer to use modern equipment and tools. The manufacturer wishing to exploit this market must now plan his advertising and sales campaigns on a basis that will produce future results. The dealer must be asked more than to buy; he must be shown in dollars and cents why investment will be a profitable one.

Highway Transport Business Needs 4000 Trained Men

Over One Billion Tons of Freight Now Carried by Motor Trucks Every Year

Speaking recently before the students of Syracuse University, F. W. Fenn, Secretary, National Motor Truck Committee, National Chamber of Commerce of New York, pointed out that careful estimates show that 4000 specially trained men will be needed in the next few years for service in the motor transport business, particularly traffic experts to be attached to state, county and municipal organizations.

"The significance of this need will be readily appreciated, when it is realized that over 1,430,000,000 tons of freight, including 134,000,000 tons of farm products are now carried over our highways every year," remarked Mr. Fenn in the course of his address.

"The reason for these increased demands on highway transport is that shippers in general, are beginning to appreciate the fact that in proportion as they relieve the railroads of less-than-carload shipments will the railroads be able to render them more efficient and cheaper service on their long-haul consignments.

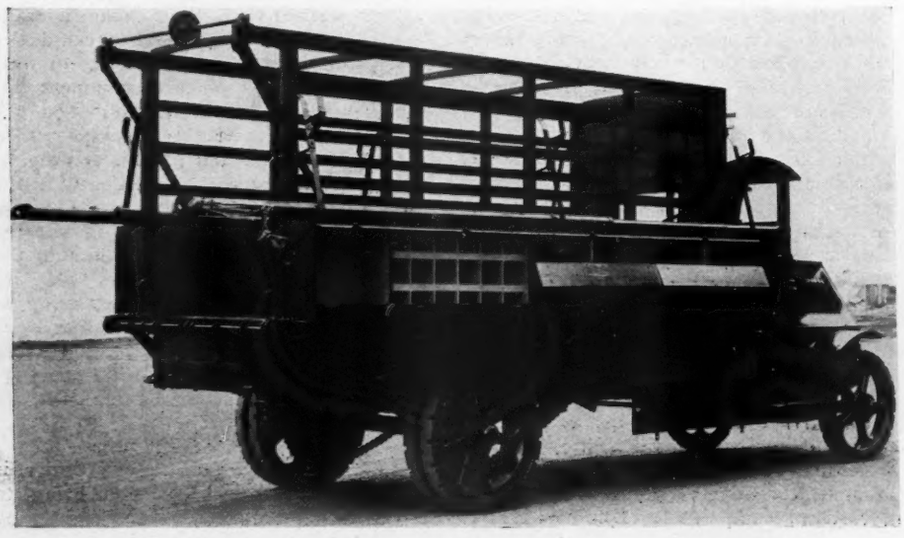
"For there has come about pretty general agreement among railroad officials that truck transportation can be substituted for railroad operation in short-branch line service, in trap car work, and in terminal and suburban distribution.

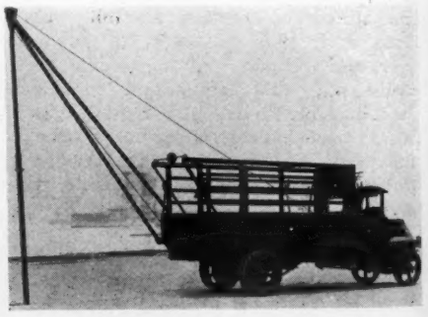
"In Cincinnati alone the use of trucks in the interchange of freight between the railroads there has resulted in the elimination of 300,000 switching cuts, the release of over 66,000 freight cars and the advancement of the railroad freight movement 52 hours.

"All this work incident to the realignment of transportation facilities to meet the new demands of commerce is going to need young men who have had training in railway and motor truck economics and operating principles. In short, the university man of today is challenged to prepare himself for a new type of transportation service that is not only going to mean relief to the railroads but prosperity to our country."

Chain Gas Stations Open in New Jersey

The Flanders Journal Square Corp. has opened the first of a chain of thirty gasoline oil and accessory stations, which will be operated throughout the State of New Jersey. The first station is located at a strategic point, 78 Sip Ave., Jersey City, on the Hudson Boulevard, and has rest rooms, parking space and a washing stand.





Dispatch and Efficiency is the Watchword of Large Corporations Engaged in Public Service

The Flatbush Gas Company, of Brooklyn, N. Y., has revolutionized the old method of making line repairs and improvements through the use of a derrick and winch combination for cable pulling, erection of poles and general construction. Every available inch of space has been utilized in this design. It is literally a rolling work shop and is mounted on an International Motor Co. chassis.

The Trend of Highway Transport Education in the United States

Presented by ARTHUR H. BLANCHARD, Professor of Highway Engineering and Highway Transport, University of Michigan, at the Second National Conference on Highway Engineering and Highway Transport Education, Held in Washington, D. C.

WHAT is included in highway transport education? I conceive that highway transport education should cover the fundamentals of the science, art, economics, and business of the transportation of passengers and commodities over highways.

Courses in this field will be taken by men looking forward to the profession of highway transport engineering, the motor vehicle industry, and the businesses of traffic management and highway transport.

In the opinion of some, highway transport may not be considered as belonging to the field of technical training and education. On sober thought, however, it will be seen that this branch of knowledge comes well within the classic definition of engineering embodied in the Royal Charter of the Institution of Civil Engineers of Great Britain, which, in part, is as follows: "The art of directing the great sources of power in nature for the use and convenience of man as the means of production and of traffic in states both for external and internal trade."

From the standpoint of highway transport business, courses in this field will be taken by men who desire to efficiently equip themselves for the position of business administrators, dealers, salesmen and advertisers in the motor vehicle industry, and executives, operators, traffic managers, motor truck fleet managers, and dispatchers in the commercial field of highway transport, and in the closely related fields of railway and waterway transport.

Demand for Highway Transport Engines

What is the demand for highway transport engineers and men equipped for highway transport business? In May, 1920, the First National Conference on Highway Engineering and Highway Transport Education held in Washington, D. C., unanimously adopted the conclusion that 4,000 men should be trained in highway transport each year in universities for the positions heretofore enumerated. Many have misinterpreted the meaning of this conclusion. Emphasis should be placed on the words "SHOULD BE TRAINED." The representative committee framing this conclusion had in mind the economic and efficient utilization of highway transport in the transportation system of the United States. They did not say that there was an immediate call for 4,000 trained men each year, but they did imply that the country would be benefited by having 4,000 men trained each year and their services utilized in the field of highway transport.

Are They Really Eligible

What is the present situation in regard to the demand for highway transport engineers and men trained in the business of highway transport? While it is true that the University of Michigan, which first instituted courses in highway transport and is in the heart of the motor vehicle industry, has no difficulty in placing its men in the highway transport field, the number of well paid positions available in this field at the present time is comparatively small. Why does this condition exist? The answer is simple. The potential users of men trained in highway transport are not educated to the value of the services of such men.

Allow me to respectfully suggest that the Highway Education Board devote at least as much time to the spread of propaganda among potential users of men trained in highway transport as in encouraging the universities throughout the United States to establish courses in highway transport. A herculean task must be consummated in this field if we are to see highway transport take its proper economic place in the transportation system of America.

Many highway departments are not properly designing the highways for even immediate future traffic because their personnel does not include men who have had a proper training in highway transport to have a vision and adequate background which will enable them to diagnose the probable development of traffic on a given highway, or, in other words, to make the prerequisite of economic highway design, a highway transport survey, which embodies all investigations in the field and office which are necessary to efficiently estimate the probable amount, character and effects of the future traffic which will use a given highway during the lives of its several component parts.

A new division in State Highway Departments. The establishment of a sound highway transport business is based on the results of an exhaustive transport survey. Why should not the same policy be followed when the economic investment of millions of dollars in highway improvements is at stake?

In order that highway transport surveys should be properly conducted and adequate provision be made for the economic design, construction and maintenance of highways, each State Highway Department should create a Highway Transport Division. The duties of this division would be to deal with all matters pertaining to traffic and transportation which affect the economic design maintenance of highways and their efficient use by pedestrians and all classes of vehicles. One of the most important functions of such a division would be to make highway transport surveys as preliminary to the design and redesign of state highways, the determination of efficient methods of maintenance, and the formulation of recommendations pertaining to efficient traffic and transport regulations.

Men assigned to a Highway Transport Division should be experienced highway engineers who have or are rapidly acquiring a knowledge of the following subjects: highway transport economics, legislation, surveys and methods; highway transport management, including delivery systems, scheduling and routing; traffic regulations; interrelationship of highway, railway and waterway transport; port, terminal and warehouse facilities; and the fundamentals of the mechanism and operation of automobiles, motor trucks, tractors and trailers.

Salary Must Commensurate Quality

In order to secure and retain the services of engineers qualified to occupy responsible positions in a Highway Transport Division, it will be necessary for State Highway Departments to pay salaries ranging from $3,600 to $10,000. Not only will the economic law of demand and supply in the highway engineering field necessitate the payment of proper salaries to engineers trained and experienced in highway transport, but highway departments will be forced to compete with the commercial demand for the services of such men.

Motor truck manufacturers' organizations are in a chaotic condition from the standpoint of the proper utilization of men trained in highway transport. Why? In general, they have followed in the obliterated footsteps of companies manufacturing highway machinery and materials. The latter companies originally

established departments which were advertised to give unbiased consulting service to their customers. Motor truck companies established a few years ago highway transport engineering departments and advertised to make a complete highway transport survey covering the requirements of a prospective user of motor trucks and to give unbiased advice pertaining to the purchase of equipment. What was the result? In the first place, it was found impracticable to divorce unbiased opinion from the commercial interests of the organization represented and soon prospective customers began to realize this self-evident fact. Second, disastrous conflict arose between the highway transport engineering department and the sales organization, a natural result to anyone familiar with the interrelationship existing between the activities of such departments. What was the final outcome in the case of companies manufacturing highway materials and machinery? The natural logical conclusion was reached that the sales organization should contain men trained in the fundamentals of highway engineering practice and the efficient use of the machinery or materials manufactured by a given company and that advice should be restricted to the efficient and economic utilization of the machinery or materials manufactured. The results have been beneficial not only from the standpoint of the commercial organizations concerned, but also from the standpoint of the general highway engineering profession and the public, which ultimately is benefited by increased efficiency. All are familiar with the efficient services rendered along these lines by such commercial organizations as the Asphalt Association, the Barrett Company, the Granite Block Manufacturers' Association, the Jennison-Wright Company, the National Paving Brick Manufacturers' Association, the Portland Cement Association, The Texas Company and many others. I predict that in the near future the motor truck manufacturers of this country will see the light and follow in the footsteps of the closely related companies who have already passed through the transition stage. Concretely stated, the sales organizations of motor truck, tractor and trailer companies should be composed of men trained in the fundamentals of highway transport and the efficient use of the equipment manufactured by the company which they represent.

The Penalty of Ignorance

Failures of highway transport enterprises are occurring every day due to a lack of knowledge of the fundamentals of the economics, science and art of highway transport. It is reported that ninety per cent of all highway transport companies doing business with New York City as a center fail within three years after entering this field. While fifty per cent may fail due to cutthroat competition by fly-by-night companies, it is conservatively estimated that at least fifty per cent fail because of lack of knowledge of the A B C's of efficient highway transport business methods, cost accounting, management, and the operation and maintenance of equipment. The Highway Education Board has a big task before it in bringing to the attention of groups of business men or capitalists, operators and prospective operators of highway transport, the necessity of having connected with their operating organizations men who are thoroughly trained in the methods of highway transport, the interrelationship of highway, railway and waterway transport, highway transport legislation, the fundamentals of highway transport cost and record systems and the principles of highway transport management, together, of course, with a knowledge of the mechanism, operation and maintenance of motor trucks, tractors and trailers.

Dearth of Instructors and Text

We find a satisfactory status relative to the development of highway transport education in the universities throughout the United States. In some institutions, the logical development occurs by the men having charge of highway engineering courses giving courses in the related field of highway transport. In other institutions, such courses are offered by the Department of Economics or Business Administration. If these departments are to efficiently teach highway transport, the instructors must have a knowledge of the fundamentals of the economics and science of highway engineering and practical highway transport. It is expected that notable developments will take place along these lines especially when authoritative texts are available. We have a development in the main of undergraduate instruction in the fundamentals of highway transport. In this connection, allow me to strongly emphasize a recommendation which I have made at the University of Michigan that all engineers should be required to take, as a part of their curricula, a fundamental course in "Transportation," which would cover the economics of the utilization and operation of highway, railway and waterway transport.

Naturally, developments in the gradate field have been slow due first, to a lack of demand by students for such courses; second, because there are few instructors who feel capable of giving graduate instruction in this field; and third, due to a lack of the necessary financial support by institutional administrators.

As soon as the demand from potential users develops, it will be necessary to materially speed up the training of mature men as well as college students in the fundamentals of highway transport. It is my belief that the graduate short period course offers the most efficient method of training mature men who may be connected with motor truck or trailer manufacturers' promotion and sales organizations; traffic departments of plants, factories, wholesale and retail stores, steam and electric railroads, and waterway transportation companies; highway transport enterprises; and state, county or municipal highway departments. Such courses in the field of highway engineering and highway transport are developing rapidly at the University, which I have the honor to represent. Eighteen of these courses are given in periods of two weeks each during the months from December to March inclusive. Each course consists of thirty lectures, or the equivalent thereof, and counts as two hours credit towards the total of twenty-four hours required for the Master's degree. Persons of mature age, who do not hold collegiate or technical degrees, may register for these courses as special students, not candidates for a degree. In the first year, 1919-1920, when such courses were offered at the University of Michigan, the attendance was twenty-nine. In 1920-1921, the attendance increased to forty-five, while in 1921-1922, ninety-four men were registered in these courses, the average age of the men being twenty-seven years, ranging from twenty-two to fifty-four years. They came from all over the United States, and some from foreign countries. They represented universities; state, county and municipal highway departments; consulting engineers' offices; contractors' organizations, companies manufacturing motor trucks, highway machinery and materials; and from the field of highway transport business. About fifty per cent of these men were graduate engineers registered in the Graduate School for the Master's degree, sixteen Master's degrees being awarded in June, 1922, to men with a major subject in highway engineering or highway transport. The other fifty per cent were mature men in practice who had not had a college training. It should be stated that all men are on an equal footing in these graduate courses and take an equal part in the discussions of the many subjects considered.

Engage Proper Personnel and Equipment

In this connection, I wish to reiterate my recommendation at the 1920 conference that at least ten universities, located in different geographical sections of the United States, offer Graduate Short Period Courses covering the various phases of highway transport, if they are financially able to engage the proper personnel and provide sufficient equipment for carrying on graduate work in this field. It is earnestly hoped that this recommendation may be favorably considered by administrative bodies of some leading universities and that they will adopt the broad-visioned policies of Dr. Marion L. Burton, president of the University of Michigan, and the Board of Regents, who have provided adequate personnel and physical equipment for the efficient development of graduate instruction and research in highway engineering and highway transport as shown, first, by their action in establishing a Chair of Highway Engineering and Highway Transport, and appointment of two assistant professors, a librarian of the Davis Library of Highway Engineering and Highway Transport, an instructor, and three assistants in highway engineering, and, second, in their assigning two floors of one wing, 65 feet by 225 feet, of the new $750,000 engineering building to the division of Highway Engineering and Highway Transport.

Let Parent Plant Solve Engine Overhaul Problem

Production Basis With Distributor Connections Offers Direct and Efficient Method, Declares Exponent of New Idea in Cutting Truck Maintenance Costs

By C. C. HINKLEY, President Hinkley Motors, Inc.

WHEN one considers the youth of the truck industry, and realizes the tremendous changes it has brought about in only ten years of real quantity production, he is inclined to pardon the fact that, in its present stage of development, the conventional heavy duty truck is a vehicle of radically unbalanced unit endurance.

In the strife for supreme strength, certain essential units have been built up to a stage of endurance against wear, almost beyond measurement by any standard of miles. Other units vary in endurance until one finally reaches the engine, certain parts of which, due to the stresses put upon them, and to the rapidity with which they move, cannot be justly asked for profitable service beyond the limits of from 50,000 to 100,000 miles.

Drain on Truck Profits

As the result of this condition we see trucks thoroughly capable of operation in every other detail, remaining idle and unproductive for many days, while undergoing costly and inefficient engine overhaul. And then comes the inevitable course, through the second-hand market and, eventually to the junk pile which the truck often reaches in fairly serviceable mechanical condition, except for an engine that is beyond all possibility of repair.

Truck operators are all familiar with this condition. They expect it. They pass through it with every truck they own. They complain often about the high costs of truck maintenance but accept them as a necessary evil.

Yet a long association and close observation of truck operation will disclose to any impartial investigator the two following facts:

1. Any good heavy duty truck will, during its normal life, reduce to the need of major overhaul at least three good engines.

2. Major engine overhaul, as generally conducted, is an operation highly extravagant and inefficient.

Overhaul Means Rebuild

My first premise will require no argument, beyond possibly a more detailed definition. Major overhaul conventionally includes such operations as the replacing of all bearings and bushings, rerounding of cylinders and crankshafts, the installation and fitting of new pistons and the renewal of all other parts that are badly worn, as well as the complete cleaning out of oil lines, the repacking of pumps and the general restoration and rebuilding of the entire unit.

That a good heavy duty truck will, in basic motor parts require such an operation three times before its other units are beyond further service will not be questioned, I am sure.

That this proves major overhaul as generally conducted is inefficient and extravagant requires no proof beyond a cursory comparison with modern production methods.

Engine overhaul in the average service station, is a slow and laborous operation in which the same two or three men handle each successive step, using chiefly hand-operated tools and seldom commanding such rudimentary aid as a reversible stand. At least one of these men must be a highly skilled mechanic at corresponding pay. Far more than mere common labor ability is needed in his assistants.

Labor Costs High

Compare this method with that which prevailed at the engine parent plant, with specialized tasks for skilled men, common labor constantly busy on the simple tasks, mechanical aid for every operation, and the entire task scheduled, lined up and reduced to a production basis.

Volume is, of course, the basis of difference. Equipment and organization are impossible without it. How then can major overhaul be placed on a volume basis? The answer has already been suggested by the reference to the parent plant.

A Production Line

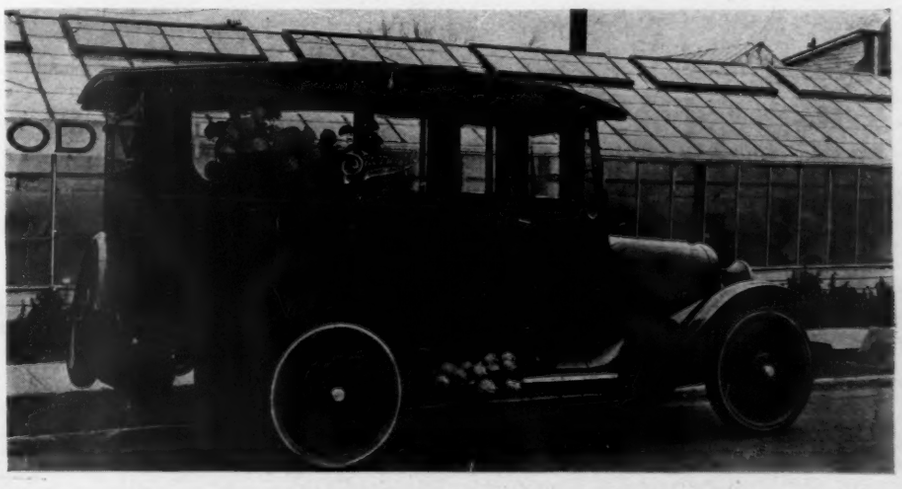
Surely no service station can furnish a major overhaul to be compared in speed or efficiency with that which would come from a production line, commanding the men and the tools that originally produced the engine itself. In such conditions work would progress with speed, accuracy and at costs far below repair shop or service station rates.

To divert major engine overhaul from the service station to the parent plant implies only one difficulty—that of truck idleness. To remove this difficulty is easy when the parent plant is locally represented with a distributor carrying factory rebuilt engines in stock. Such a facility permits immediate replacement of the worn out engine with one new or remanufactured, thus allowing ample time for shipment and replenishment of distributor's stock and reducing idle truck time to the half-day or less required to change complete engines.

Cuts Cost in Two

Cost of such engine renewal is approximately half that of major overhaul under the service station basis, and the resulting job is far superior. Yet the distributor has lost none of his profit, for he has a clean margin on the deal. Also his service staff has been freed to give his customers the detailed and less complicated service which they are best fitted to provide.

That such service is successful in the field of truck engines has already been proved. Whether replacement, rather than localized repair will be similarly efficient in the basis of such units as transmissions or rear axles—or whether the idea will be similarly applicable to automobiles, remains to be seen. The field is open and the consumer is surely open to conviction.



Last Word in Florists' Delivery Equipment

This job, which has occasioned much favorable comment by florists who have seen it, is a standard Dodge Bros. delivery car with a special custom-built body made by the Kratzer Body Co., Des Moines, Iowa. It was designed by Harter B. Hull of Waterloo, Iowa. A double side door permits loading at the curb, which solves a greenhouse problem, and an auxiliary seat permits the carrying of an additional passenger without interfering with the loading space.

Always a Good Dealer Proposition
Now ~ Better than Ever

Check These Specialized Units, Mr. Dealer

A chain is no stronger than its weakest link—a truck is no better than its least efficient part.

The enviable record made by the Federal Truck during the past thirteen years is largely due to its practice of using the best specialized units—each made by the most expert manufacturer in his particular line.

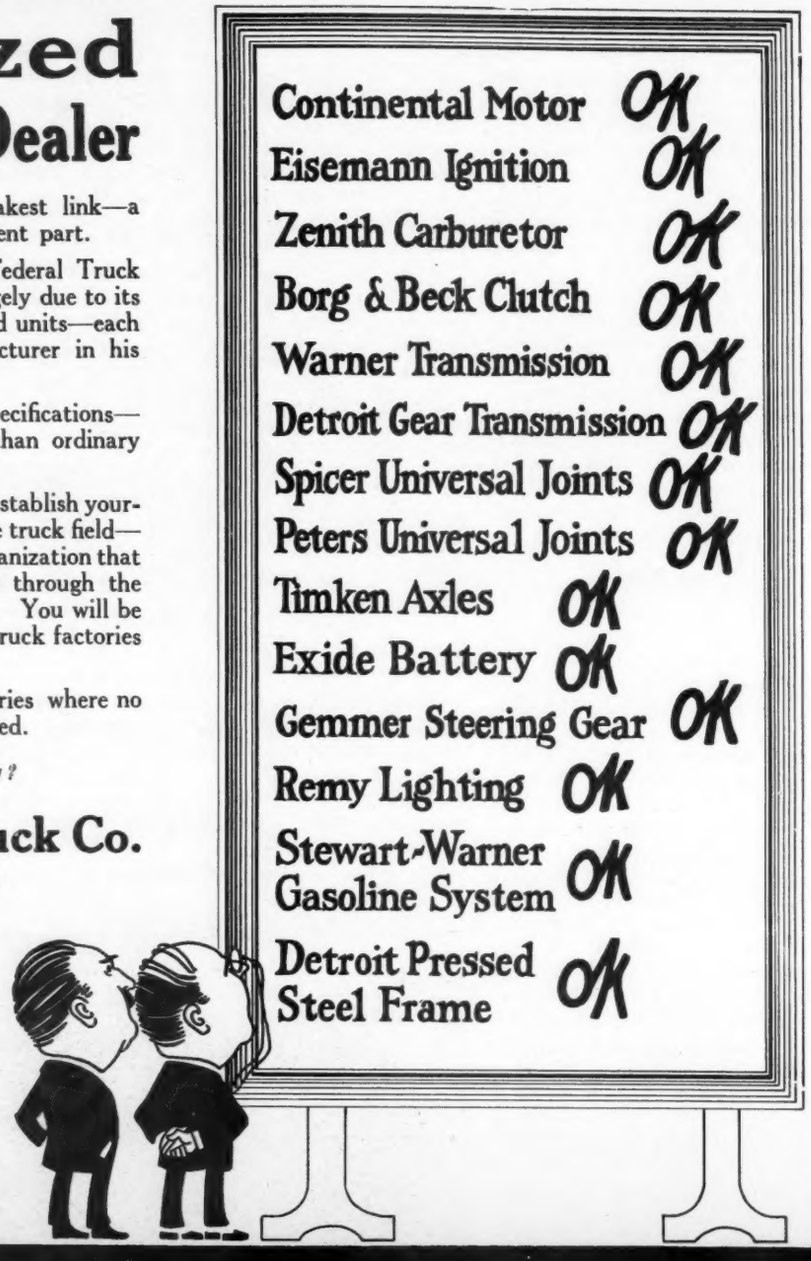
These parts are made to Federal specifications—in most cases larger and stronger than ordinary truck usage demands.

If you line up with Federal you will establish yourself with the recognized success in the truck field—you will be part of a truck selling organization that has held together and made money through the lean years as well as the fat ones. You will be associated with one of the strongest truck factories in the country.

You may be in one of the territories where no Federal distributor has been appointed.

Will You Write the Factory?

Federal Motor Truck Co.
Detroit, Michigan



Another **FEDERAL** Dealer
is another Successful Truck Merchant

EDITORIALS

Regarding the Used Truck Problem

AT a recent meeting of truck manufacturers in New York City the Boston used car plan was outlined by L. B. Sanders, secretary of the Boston Used Car Statistical Bureau. He convinced his audience that the plan worked to the entire satisfaction of the some eighty dealers who subscribed to it. This central information bureau furnishes weekly information on the average resale value of used passenger cars.

This plan seemed to impress most of the truck manufacturers as being perhaps the solution for the used truck problem. Its adaptability to the truck field was questioned. Mr. Sanders stated that he believed this plan could at least be applied in principle to the truck division and suggested that it might be possible to classify trucks by vocation as well as age, in working out the allowance figures, because of the varying conditions under which trucks of the same model might be operated.

In his remarks he repeatedly indicated that the manufacturer should take the lead in handling this problem. He believes that the truck dealers could readily cope with the situation if they would get together in their respective communities and handle the used truck through a local appraisal committee. However, if the dealer fails to accomplish anything definite in this respect, and so far on the average he has not, it then remains for the manufacturers to get together and do something. One thing is certain, no relief can be expected from outside sources. It is a problem which the manufacturers can eliminate by co-operation and education. The question is—how soon will they do it?

How the Dealer Can Help Combat Drastic Legislation

IN every state of the Union more bills are being directed against the automotive industry than ever before in the history of the business. The startling point revealed by those examining these bills is that most of them are directed at the motor truck rather than the passenger car contingent. The truck dealer may wonder why such is the case. The answer is simple. In the first place there are more passenger car owners and in the second place they are organized. There are touring and motorists' clubs all over the country which among other things are ready to take up legislative matters such as those mentioned. Furthermore the politicians have become wise to the power of the passenger car owners at the polls.

But the truck owner is not so well organized, except in a few states. It is for that reason that the Motor Truck Club of Philadelphia saw fit a few years ago to invite truck owners of the state of Pennsylvania to join its organization. This move was instrumental in combating some wholesale increases in the motor truck license fees some months later.

The motor truck dealer can be a big factor in combating pernicious legislation by giving his local association his full support and enlisting the support of the truck owner; for he, after all, is the one who is mostly affected.

"Write to your representative" is the usual advice given to those in the trade when legislative action threatens their business interests. But many dealers do not know who their representatives are, and not knowing offhand, simply let the advice go on unheeded. To aid in defeating certain bills which have recently made their appearance in New Jersey, the Motor Truck Club of New Jersey, broadcasted a placard giving the numbers of the bills, as well as the names and post office addresses of all state senators and assembly men in the state. This is a method which might well be copied by other organizations.

Air Filters for Motor Trucks

THE tractor industry has for some time past recognized the necessity of equipping tractors with air filters. These filters, which clean the air before it reaches the carburetor, not only prevent the ingress of foreign matter to the combustion chamber, but prevent a lot of carburetor trouble, due to clogging of the needle valve with road dust.

Within the last year quite a few truck manufacturers have seriously considered the application of air filters as standard equipment. In connection with trucks used around concrete manufacturing plants, in mining, etc., the air filter has been extensively used. But there is no reason why the air filter should not be applied to most every truck in use. This is one of numerous forms of equipment which the truck dealer could sell to the truck owner, provided he is already selling a line of equipment such as every real truck dealer should be handling.

News of the Trade in Brief

Truck Session at N. A. C. C. Advertising Conference

One of the two days occupying the Advertising Managers' meeting of the National Automobile Chamber of Commerce, held at the University Club, Chicago, January 29 and 30, was devoted to the motor truck and its various ramifications. The truck sessions at which L. B. Dudley, of the advertising committee of the N. A. C. C., presided, were held on the second day of the meeting.

On the subject of "Advertising of Commercial Passenger Vehicles," Gordon Lee, export manager of the Yellow Cab Mfg. Co., pointed out that the public should first be sold on need of commercial passenger vehicles and then sell the dealer on the demand.

On the question of the advantages of a house organ for truck owners, it was suggested that the booklet be prepared as a newsy, interesting sheet similar to those sent to passenger car owners. Theissue might contain some cost figures, but should not have too much sales talk.

During the afternoon session W. H. Reese, advertising manager of the Sterling Motor Truck Co., led the discussion on the Value of Special Advertising Media. During the course of the discussion it was suggested that constructive ideas be sent to the editors of the various trade publications, not particularly for publication, but rather to place the publishers in a better position to meet the new problems in the industry.

The session on the morning of the 29th dealt with Motor Car topics; in the afternoon the topics covered the whole industry. Edward S. Jordon, chairman of the Advertising Committee of the N. A. C. C., presided.

The N. A.C. C. advertising committee consists of Edward S. Jordan, chairman, A. B. Batterson, W. E. Betts, L. B. Dudley, C. H. Phelps, G. U. Radoye, W. K. Towers and John C. Long, secretary.

Hawkins Made General Consultant of General Motors

Alfred P. Sloan, Jr., vice president in charge of operations of General Motors, announces that Norval A. Hawkins has been appointed as a general consultant, with headquarters in Detroit.

B. G. Koether has been appointed acting director of the sales, advertising and service section, advisory staff of the corporation, with headquarters in Detroit. Mr. Koether has been vice president of the Hyatt Roller Bearing Co., in charge of sales, also assistant general manager of the Hyatt Bearings Divisions of General Motors Corp., Newark, N. J.

H. A. Brown, Jr., has been appointed general manager of sales, Hyatt Roller Bearing Co., headquarters Harrison, N. J.

F. E. Booth has been appointed manager central division Hyatt Roller Bearing Co., headquarters Detroit, Mich., succeeding H. A. Brown, Jr.

Coming Events

SHOWS

February 15 to 17, 1923—Ottawa, Ill. 5th annual automobile show of the Chamber of Commerce, Ottawa Armory. Passenger cars, trucks, tractors and accessories. L. C. Carroll, Mgr., 108 College Bldg.

February 16 to 26, 1923—Columbus, O. Annual automobile show, auspices of the Columbus Automobile Dealers' Assn. Andrew B. Coates, Mgr.

February 16 to 26, 1923—San Bernardino, Calif. Automobile exhibit in connection with 13th annual National Orange Show, Tent. Passenger cars, trucks, tractors and accessories. R. H. Mack, Mgr., 215 Chamber of Commerce Bldg.

February 17 to 22, 1923—New York, N. Y. Universal Exposition of Inventions and Patents, auspices of Universal Patent Exposition Corp., at Grand Central Palace. Exec. Offices, World's Tower Bldg., 110 W. 40th St., New York.

February 17 to 24, 1923—Hartford, Conn. Annual automobile show of the Hartford Automobile Dealers' Assn., at the Armory. Arthur Fifoot, Mgr.

February 17 to 24, 1923—San Francisco, Calif. 7th annual Pacific Coast Show, sanctioned by Motor Car Dealers' Assn. of San Francisco, Exposition Auditorium. Passenger cars, trucks, tractors and accessories. G. A. Wahlgreen, Mgr., 215 Humboldt Bank Bldg.

February 17 to 24, 1923—Akron, Ohio. 9th annual show of the Akron Automobile Exhibition Co., Central Garage (45,000 sq. ft.). Passenger cars, trucks, tractors, accessories. E. T. Jones, Mgr., 1091 W. Exchange.

February 19 to 24, 1923—White Plains, N. Y. Third annual show of White Plains Auto Dealers' Assn., auspices of 102nd Ammunition Train N. Y. N. G., State Armory. Passenger cars, trucks, tractors and accessories. Callahan & Partlan, P. O. Box 1186, Pittsfield, Mass.

February 19 to 24, 1923—Schenectady, N. Y. Automotive show, auspices of the Schenectady Automotive Dealers' Assn., at the Armory. J. T. Henley, Mgr.

February 20 to 24, 1923—Deadwood, S. D. 11th annual show of Deadwood Business Club, Auditorium. Passenger cars, trucks, tractors, accessories and radio. F. R. Baldwin, Mgr.

February 21 to 24, 1923—Trenton, N. J. 8th annual show, Trenton Automobile Dealers' Assn., at 2nd Regt. Armory. Passenger cars, trucks and accessories. Frederick Petry, Jr., W. State and Willow Sts.

February 22 to 24, 1923—Springfield, Ill. 4th annual show of Springfield Auto Dealers' Assn., Illinois State Armory. Passenger cars, trucks and accessories. Basil W. Ogg, Mgr., 213 E. Capitol Ave.

February 24 to March 3, 1923—Albany, N. Y. 13th annual automobile show of the Albany Automobile Dealers' Assn., State Armory. J. B. Wood, Mgr.

February 24 to March 3, 1923—Brooklyn, N. Y. Annual automobile show of the Brooklyn Motor Vehicle Dealers' Assn., Inc., at 23rd Regt. Armory. Ralph Ebbert, Exec. Secy.

February 24 to March 4, 1923—Youngstown, O. Annual show of the Youngstown Auto Dealers' Assn., New Vahey Bldg. C. A. Baird, Mgr.

February 26 to March 3, 1923—Omaha, Neb. 18th annual show, Omaha Automobile Trade Assn., Inc., Municipal Auditorium. Passenger cars, trucks and accessories. A. B. Waugh, Mgr., 2051 Farnum St.

February 26 to March 3, 1923—Springfield, Mass. Annual automobile show, auspices of the Springfield Automotive Dealers' Assn.

February 26 to March 3, 1923—Syracuse, N. Y. 15th annual show at State Armory (43,000 sq. ft.). Passenger cars, trucks and accessories. Howard H. Smith, Mgr., 701 Eckel Bldg.

February 26 to March 3, 1923—Portland, Maine. 9th annual show of Portland Automobile Dealers' Assn., Exposition Bldg. Passenger cars, trucks and accessories. Howard B. Chandler, Mgr., 3 Park Ave.

February 28 to March 3, 1923—Poughkeepsie, N. Y. Annual show, auspices of Poughkeepsie Automotive Dealers' Assn., Marian Bldg., Charles Brooks, Mgr.

March 3 to 10, 1923—Harrisburg, Pa. 13th annual show of the Harrisburg Motor Dealers' Assn., Inc., at the new Studebaker Service Bldg., 4th and Boyd Sts., Jos. A. Hudson, Mgr.

March 5 to 10, 1923—Indianapolis, Ind. Annual show of Indianapolis Automobile Trade Assn.

March 9 to 17, 1923—Elizabeth, N. J. 5th annual show of Elizabeth Auto Trade Assn. in co-operation with Elks, 2d Regt. Armory.

March 10 to 17, 1923—Newark, N. J. Annual automobile show, auspices of the Newark Auto Assn., C. E. Holgate, Mgr.

March 10 to 17, 1923—Boston, Mass. 21st annual show, auspices of Boston Automobile Dealers' Assn. & Boston Commercial Motor Vehicle Assn., Mechanics' Bldg. (125,000 sq. ft.). Passenger cars, trucks, tractors and accessories. Chester I. Campbell, Mgr., 5 Park Sq.

March 13 to 17, 1923—Great Falls, Mont. 8th annual show of Montana Automobile Distributors' Association, Market Bldg. Passenger cars, trucks and accessories. A. J. Breitenstein, Mgr., Hotel Rainbow.

March 14 to 17, 1923—Denver, Colo. Annual automobile show of the Denver Automobile Dealers' Assn., T. D. Braden, Secy., 1278 Broadway.

March 28 to 31, 1923—Greenville, S. C. Annual Automobile Show at Textile Hall, auspices of Automotive Bureau of Chamber of Commerce.

CONVENTIONS

Corpus Christi, Texas, March, 1923—Convention of the Texas Automotive Dealers' Assn. W. A. Williamson, Mgr., San Antonio, Tex.

Greenville, S. C., April 16 to 21, 1923—11th annual convention United States Good Roads Assn., and 6th annual convention Bankhead National Highway Assn.

New York, N. Y., February 16, 1923—Joint meeting, American Society of Safety Engineers and Engineering Section, National Safety Council at Engineering Societies Bldg.

New Orleans, La., April 25 to 27, 1923—Tenth National Foreign Trade Convention of the National Foreign Trade Council.

Oakland, Calif., February 26 to 27—Northern Division meeting of the California Automobile Trade Assn., Robert W. Martland, Secy., Oakland.

Quincy, Ill., March 3, 1923—Fourth annual convention of the Illinois Automotive Trade Assn. F. C. Zillman, Mgr., 212 Lehmann Bldg., Peoria, Ill.

Richmond, Va., March 8, 1923—Annual convention of Virginia Automobile Dealers' Assn., Murphy Hotel.

Salt Lake City, Utah, February, 1923—Annual meeting of Intermountain Automotive Trades Association. C. L. Snow, Mgr., Salt Lake City.

Twin Falls, Idaho, July 14 to 15, 1923—Annual meeting of the Idaho Automotive Trade Assn.

FOREIGN EVENTS

Goteburg, Sweden, May 8 to July 15, 1923—International automobile exhibition in connection with the Goteburg Jubilee Exposition.

London and Birmingham, England, February 19 to March 2, 1923—British Industries Fair. Apply British Consulate General, Chicago, Ill.

Paris, France, October 4 to 10, 1923—Show at Grand Palais. Passenger cars, accessories, motorcycles and bicycles.

Rome, Italy, March 19 to 24, 1923—General meeting. International Chamber of Commerce.

Seville, Spain, May, 1923—International Road Congress.

Much Interest Evidenced at Cleveland Truck Show

That there is a real revival in interest in the motor truck industry was proved at the big motor truck and commercial vehicle show staged by the Cleveland Automobile Manufacturers' and Dealers' Association during the week of January 13-20, in the Central Armory, in Cleveland. The show was put on in connection with the annual passenger car show in the new civic auditorium, and fully fifty per cent of the people who went to the passenger car show crossed the street and saw the truck exhibition with equal interest.

Every space in the armory was occupied by exhibits of motor truck manufacturers, trailer manufacturers or allied lines.

While there were trucks of many various types on exhibition, the show of motor buses was exceptionally complete, almost every known type being shown. To many who attended, the bus exhibit was a real education, for the average city dweller has little conception of the high class of motor vehicle used in intercity transportation these days.

The coach type of buses came in for the greatest interest. Several fine examples of this class of vehicle were on exhibition, and they were viewed and tried and examined by all who entered the hall.

The trailer exhibit was good, also, and showed the advance made by this ally of the motor truck in the past few years.

As a buying show, the Cleveland exhibition was a real success. Every exhibitor of trucks on the floor expressed himself as more than pleased with the number of actual sales made during the week and with the very evident revival of interest in motor truck haulage shown by those who attended.

The Cleveland association is to be congratulated on making it possible for motor truck manufacturers to have a show of their own during the week of the big passenger car show. So successful was the event this year that it probably will be repeated in future years.

G. G. G. Peckham is president of the Cleveland association and Herbert Buckman is manager. Mr. Buckman managed both the passenger car and truck shows, and is to be congratulated on the success of the two big attractions.

Forsyth Bought by Motor Wheel

Following the acquisition of the Disteel Division of the Detroit Pressed Steel Co.,, by the Motor Wheel Corp., Lansing, Mich., a third wheel manufacturer is announced in the merger. The Forsyth Brothers Co., of Harvey, Ill., manufacturers of Forsyth wheel, has also been purchased by the Lansing manufacturer. The completed merger now represents a capital of $10,000,000 with eight plants capable of producing 16,000 wood wheels and 8,000 steel wheels daily.

The present executive force will remain intact with H. F. Harper, president; A. C. Carlton, vice-president, andd J. B. Siegfried, general sales manager.

United & Globe Corp. Absorbed by New Company

The United & Globe Rubber Corp., recently incorporated under the laws of Delaware, has absorbed the United & Globe Rubber Co., Trenton, N. J., one of the oldest rubber manufacturers in the trade. The new company has acquired all the assets, patents, trade marks and business of the old company, which passes out of existence.

John S. Broughton, president of the old company, has been made chairman of the board of the new concern, and Guy de la Riguadiere, president of the Traveler Rubber Co., of Bethlehem, has been elected president of United & Globe. From the Traveler Co. also come Victor Durand, Jr., and G. J. P. Raub, who now are first and second vice presidents of both corporations. No other personnel changes are contemplated.

Officers Elected at Klaxon Company

General Motors Corp. announces the following election of officers and directors of the Klaxon Co., Newark, N. J.: William M. Sweet, president; Fred W. Ayers, vice president; M. I. Mullen, secretary and treasurer. Board of directors: William M. Sweet, Fred W. Ayers, Alfred P. Sloan, Jr., John L. Pratt, John P. Smith.

Fred W. Ayers, who has just been made vice president has for the last two years been connected with the Klaxon Co. as general works manager.

Willard J. Gramm

Sons that inherit their father's mechanical genius as well as executive ability are exceptions to the rule. Willard Gramm, son of one of the truck industry's pioneers, B. A. Gramm, vice-president and general manager of the Gramm-Bernstein Motor Truck Co., is one of those exceptions and we feel safe in predicting that he is destined to equal the reputation of his talented father. The younger Gramm was placed in the shop at the time he was old enough to hold a tool. As he had a certain latent talent for mechanics, his motor truck education came easily and rapidly and his contact with older men afforded him an opportunity to acquire a fund of practical knowledge. After working in every department of the motor truck plant, he completed his technical education at a university of applied science and was able to gather further experience during the war days on the Standardized Class B military truck. He is today chief engineer and factory manager of the Gramm-Bernstein Co. He has designed the Gramm-Bernstein speed truck which embodies simplicity, lightness and strength. B. A. Gramm has seen 22 years service in the truck industry and there is every indication that the name of Gramm will be a prominent one within the industry for some time to come.

Service Station Equipment Featured Chicago Show

Although the Chicago show is given over to the passenger car industry, there were exhibits by manufacturers of truck engines, axles, etc., and of service station equipment and supplies. The number of concerns manufacturing service station equipment and tools designed to produce more accurate work at less labor cost, exceeded those of past years which is an indication of the demand for better and cheaper service.

A feature of the exhibits was the large number of valve refacing and cutting machines shown. While these were mostly designed for the purposes mentioned, a number of makers showed these power-driven equipments with attachments with which pistons, piston pins, etc., could be ground. One of the most interesting and practical machines shown was a new design by Evans & Ould, New York City, representing the Cedar Rapids Engineering Co., Cedar Rapids, Ia. The machine, termed the Kwick-Way, with its attachments, refaces valves, grinds the stems, and performs many other operations. What is said to be a distinct new feature, is a cutter attachment, for the generator and motor armature. Another new attachment is one that will accurately reface the contact points of the battery breaker mechanism.

Exhibitors of service station equipment were pleased at the interest shown. Many stated that more real prospects were present than heretofore and that it indicates a big market for time and labor-saving machines and tools for 1923. According to several exhibitors, the proprietors of garages and service stations in the smaller places are seriously considering the installation of service station equipment and several expressed the thoughts that the demand was largely due to competition brought about by the increasing use of the "flat rate" in service. One exhibitor remarked that the well-equipped shop got the business and that it was necessary to have equipment to remain in the repair business.

Trucks at Independent Show

In a building adjoining the Coliseum was an independent show at which trucks were featured. A complete line of Traffic truck chassis ranging from the Traffic Speed Boy of 1½-ton capacity, to 5-ton, was displayed. The Defiance Motor Truck Co., Defiance, O., exhibited its Royal Bus, a 25-passenger pay-as-you-enter type which is an example of excellent bus design. The company also exhibited a chassis. The tourist or camp type of body, shown by a Chicago concern and mounted on a White chassis, attracted no little attention because of the completeness of the job.

Ralph E. Espy has purchased the interests of H. W. Norton, of the Burgess-Norton Mfg. Co., of Geneva, Ill., manufacturers of B-N piston pins and Bur-Nor all steel hatchets.

Cleveland Dealer Made President of N. A. D. A.

G. G. G. Peckham, of Cleveland, president of the Ohio Buick Co. and of the Ohio General Motors Truck Co. was elected president of the National Automobile Dealers' Association at its sixth annual convention at Chicago during Chicago show week.

While the two days' program of the association was given over exclusively to the consideration of the problems of the passenger car dealer, many of the subjects were quite as applicable to the motor truck dealer and manufacturer.

G. G. G. Peckham

The association unanimously passed a resolution suggesting to manufacturers that the time has come to undertake such surveys of marketing conditions as will determine accurately the absorption power of various territories, and that production schedules of all manufacturers be drawn up with regard to this absorption power rather than on the mechanical facilities of the plants to turn out products or based on the productive capacities of competitive manufacturers.

The other officers elected at the annual meeting were as follows:

First vice-president, John Butler, Dodge Brothers, Kansas City; second vice-president, Charles E. Gambill, Marmon-Hupmobile, Chicago; treasurer, F. W. A. Vesper, Buick, St. Louis. Directors, J. S. Harrington, Hupmobile, Minneapolis; C. B. Warren, Nash, New York; John L. Bovis, Oldsmobile, Cincinnati; Ginder Abbott, Packard, New Orleans; W. L. Eaton, Dodge Brothers, Seattle. The holdover directors are Tom Botterill, Hudson-Essex, Denver; P. H. Greer, Marmon, Hupmobile, Los Angeles; A. J. Shorey, Velie, Boston; George O. Wildhack, Reo, Indianapolis, and R. H. Martin, Nash, Lafayette, Atlanta.

The association starts in the new year with greater financial strength and better membership prospects than ever before. Over twenty groups of members, located in various cities of the country, will run the co-operative advertising of the N. A. D. A. in local papers once each week during the year, in an endeavor to educate the public to the proper appreciation of what a modern, high class automobile dealer is.

Prosperity to Continue in Parts Field in 1923

"The universal public consciousness of car values is the greatest asset that the automobile industry has and it is largely due to the uniform excellence and dependability of the engine, axle and other products of the parts and accessory manufacturers. Their work, plus the demonstrated integrity of the car and truck manufacturer, gives a deserved prosperity to our industry." This idea of car dependability in relation to specialized unit and accessory branch of the industry formed the pivotal point of the excellent address delivered at the Advertising Managers' Council of the Motor & Accessory Manufacturers' Association at the Congress Hotel, Chicago, January 31, by Ezra W. Clark, advertising manager of the Clark Equipment Co., Buchanan, Mich.

Speaking further on specialization, Mr. Clark said:

"The retiring president of our association, Mr. E. H. Broadwell, vice president of the Fisk Rubber Co., quite aptly defines this condition in the following words: 'The specialized vehicle is the one that co-ordinates the specialized engineering and manufacturing skill and resources of the principal unit and equipment manufacturers.'"

It was announced that the volume of parts, units, and accessories sold to car and truck manufacturers for original equipment of vehicles during 1922 aggregated close to one billion dollars—the estimate of the M. A. M. A. being $982,952,384. Sixty-nine per cent of the average car and truck consists of specialized parts or equipment furnished by unit and accessory manufacturers. Replacement business in parts and accessories in 1922 amounted to $768,569,024, bringing the grand total value of parts, unit, and accessory production to $1,751,521,408.

Edward S. Jordan, president of the Jordan Motor Car Co., Cleveland, Ohio, said the determining factor in industry is merchandising. He poined out that many dealers failed last yeai and that the thirty-two thousand who are left are much weaker than the same number a year ago.

L. B. Dudley, advertising manager of the Federal Motor Truck Co., Detroit, Mich., discussed the theme from the standpoint of the truck manufacturer. He emphasized the fact that no charted line of demarcation can be drawn between the so-called "specialized" or "assembled" car manufacturer, and the self-contained vehicle producer. All trucks are specialized —the only difference being in the degree of specialization.

William Mack, sales manager, Borg & Beck Co., Chicago, Ill., stressed in his paper on the theme "In Relation to the Parts Manufacturer" the necessity of the parts manufacturer giving instruction to the dealers upon the proper care and servicing of the essential units of the automobile.

W. O. Rutherford, B. F. Goodrich Rubber Co., Akron, O., made a brief address commending the advertising executives upon their own unselfish, co-operative work in the interest of the automotive industry as a whole.

Lon Smith With Bishop & Babcock

Announcing the appointment of Lon R. Smith, of Indianapolis, as consulting engineer on both sales and engineering in connection with its automotive specialties division, the Bishop & Babcock Co., of Cleveland, O., indicates the launching of an aggressive sales campaign. Special interest is to be centered at this time, it is stated, on the automatic temperature control device now being marketed under the name "Bishop-Babcock Aquastat."

Mr. Smith is recognized as one of the foremost engineers and sales executives

Lon R. Smith

in America and has a wide acquaintance through his activities in the Society of Automotive Engineers.

For many years Mr. Smith's chief interests have been in the development of the internal combustion engine. He will be remembered as sales manager for many years for the Buda Engine Co. Some years ago Mr. Smith became general sales and advertising manager of the Midwest Engine Co., of Indianapolis and was later made vice-president of that organization as sales and engineering executive.

Lamp Manufacturers in Merger

According to a recent announcement, the Corcoran-Victor Co., lamp manufacturer is to be absorbed by the Thomas J. Corcoran Lamp Co., both at Cincinnati. It will be remembered that the Corcoran-Victor Co. is the outgrowth of a merger effected ten years ago when the Victor Lamp Co., and the Thomas J. Corcoran Lamp Co., of which Thomas J. Corcoran was organizer and president, combined. Mr. Corcoran left the lamp company about four years ago, forming the present Thomas J. Corcoran Lamp Co.

The committee of directors of the Corcoran-Victor Co., in charge of merger arrangements is composed of George A. Sawyer, Charles E. Pfau, B. W. Lamson and W. B. Grischy.

Highway Traffic Convention Postponed

The 1923 convention of the National Highway Traffic Association, which was to have been held in Cleveland, O., on February 19th and 20th, has been postponed.

Manufacturers See Keen Competition Ahead

Executives of passenger car, motor truck and parts manufacturing companies to the number of 125 were guests at the second annual business conference and luncheon held under the auspices of the CHILTON COMPANY on Wednesday of New York Show Week, at the Commodore Hotel.

A very keen interest in the proceedings, and a marked desire to become thoroughly conversant with all the interesting phases of the industry presented during the discussion, was evident during entire program.

C. A. Musselman, treasurer and general manager of the CHILTON COMPANY, presided at the luncheon. J. H. Collins, manager of the commercial survey department, was the first speaker, and his summary of current manufacturing and merchandising phases of the passenger car and motor truck industries was given the very closest attention.

Mr. Collins' very able presentation of facts and deductions was followed by a general discussion in which there participated Messrs. H. H. Rice, president of the Cadillac Motor Car Co.; A. R. Erkstine, president of the Studebaker Corp.; Roy D. Chapin, president of the Hudson Motor Car Co.; F. E. Moskovics, vice-president of the Nordyke & Marmon Co.; George M. Graham, vice-president of the Chandler Motor Car Co.; Windsor T. White, chairman of the board, White Company; C. F. Kettering, president of the General Motors Research Corp.; Alfred Reeves, general manager of the National Automobile Chamber of Commerce; F. W. Fenn, secretary of the Motor Truck Committee of the N. A. C. C., and others.

The interest of those present centered on the possible production for 1923, as revealed by Mr. Collins' deductions, and the distribution of this production in a manner that would not only make money for the manufacturers, but would also safeguard the financial interests of the distributor and dealer.

There seemed no division of opinion as to the splendid prospects that 1923 holds out to the automotive industry as a whole. Those present were unaminous in the opinion that this year will be one of the banner years of the industry, and may even surpass 1922 in actual production and sales figures. That this year will be more than ever highly competitive, that the most intelligent sales effort will have to be put forth by those who lead, and that all will have to get right down to hard, conscientous work, was thoroughly agreed upon.

Cornelius T. Myers, consulting automotive engineer of Rahway, N. J., desires to let it be known that for many months past the Federated Engineers' Development Corporation of Jersey City, has, in spite of his protests, made use of his name in order to promote the sale of their stock. His temporary connection with that concern, as a member of its advisory council, was merely in an advisory capacity. Some time ago he resigned as member of that council and is now in no manner whatever associated with that concern.

New Asbestos Brake Lining Association Elects

S. S. Simpson, president of the Asbestos Brake Lining Association, has announced the election of Arnold A. Mowbray as commissioner of that organization which is composed of manufacturers located throughout the country. Headquarters have been opened at 17 West 42nd St., New York City.

Mr. Mowbray is new to the brake lining industry and was elected for the position of commissioner because of his broad experience as an association executive. He formerly was executive secretary of the National Selected Morticians and also served as manager of the membership and publicity departments of the National Association of Credit Men. He is an active member of the American Trade Association Executives.

Clark is President of Watson Truck Company

Harry J. Clark, of Syracuse, has been made president of the reorganized Watson Truck Co., of Syracuse, which was formerly the Watson Products Co. During the recent receivership, Mr. Clark managed the concern.

Election of officers resulted as follows: Herman Casler, vice-president; Charles R. Chapman, secretary; Robert H. Imhofe, assistant treasurer; and J. M. Wood, assistant treasurer.

K. & M. to Increase Production Facilities

The K. & M. Truck Body Works at Tekonsha, Mich., will start steady production on truck cabs and stake and closed bodies for Fords early this spring.

D. G. Martinson, general manager of Keep & Martinson, has authorized a sales and advertising program for the K. & M. products, and factory equipment and production will be speeded up as soon as this can be accomplished.

Receiver Appointed for the Thomart Motor Co.

Francis Seiberling, an Akron attorney has been appointed receiver for the Thomart Motor Co., Kent, O., on application of W. G. Thompson, president of the company. The application states that the numerous creditors are threatening to bring suit against the company and that in event these suits are started, manufacturing activities would have to be discontinued.

California Shows Big Gain in Truck Buying

According to Motor Registration News of Oakland, Cal., a Pacific Coast publication, the State of California bought 18,569 trucks and 150,628 passenger cars in 1922. The gain in truck business is equivalent to 57 per cent and the passenger car increase amounts to 45 per cent.

Ostby Receives Tribute From His Distributors

Success in distribution of a product is measured in terms of co-operation between the manufacturer and his selling organization. Where cordial relations exist between the producer and retailer merchandising is successful and profitable. Where the retailer has confidence in the manufacturer and his product sales follow. And so when the distributors of the Prest-O-Lite products tendered a testimonial dinner to Oscar F. Ostby, general sales manager of the company, at New York recently, they went on record as to the value of these factors.

The testimonial, which was prepared on sheepskin embellished with gold leaf, was as follows:

> "Your distributors feel that your selection as general sales manager of the Prest-O-Lite Company is certain to prove of distinct mutual advantage to them and the company. They realize that executives of today, more than at any time, must be men of broad vision, rugged personality and strong fighting convictions and they also feel that no better general than you could possibly have been selected, since you possess these qualities in a pre-eminent degree.
>
> "They appreciate, however, that the best general in the world cannot plan and carry to a successful completion a winning fight without the whole-hearted co-operation of his men, and therefore we, your undersigned distributors, are proud of the privilege to present this testimonial as a public expression of their confidence, loyalty and good will.
>
> "Your distributors are really your final judges; they decide the success or failure of your administration, and therefore this testimonial from them will, we hope, inspire you to the achievement of the leadership to which we know you aspire, and to carry the Prest-O-Lite Company to its highest possible place in the battery world."

Distributors were present from all sections of the country and those who were not able to be present sent messages of similar character.

Kellogg Power Driven Truck Pumps Reduced

In keeping with the policy of the Kellog Manufacturing Co. it has been found possible through increased manufacturing facilities and greater production to reduce the list price on power-driven tire pumps to $16, for speedwagons and express trucks $30 and $36 for the single cylinder No. 251 truck pumps and $78 on the two cylinder No. 42 truck pump.

Kellogg pumps are furnished as standard equipment on over ninety different pneumatic tired trucks. Where the pump is not furnished a special opening is provided in the transmission over which the pump can be mounted.

Reo to Build Big Addition to Cost Half Million

Work on a new storage and shipping building to cost in the neighborhood of a half million dollars and to have approximately 640,000 square feet of floor space, will be started by the Reo Motor Car Co. by March 1st, according to announcement coming from the plant offices.

Personal Items

J. A. Bowerman has resigned his position with the Fisk Division of the Fisk Rubber Co., at Chicopee Falls, Mass. Mr. Bowerman has been with the company for five years, the last three of which he served in the capacity of assistant general production superintendent.

Richard E. Cameron has been appointed district sales manager for the Chicago District of the Brunswick-Balke-Collender Co. Mr. Cameron came to Chicago from the company's Cincinnati house.

C. J. Cassese, formerly assistant sales manager and acting general sales manager of the Four Wheel Drive Auto Co., was recently made general sales manager.

Richard A. Crooker, for the past 11 years sales manager of the Allen Auto Specialty Co., has been made Eastern district sales manager of the Automotive Division of the Columbus McKinnon Chain Co., manufacturer of Dreadnaught tire chains. He will maintain headquarters at 30 Church St., New York City.

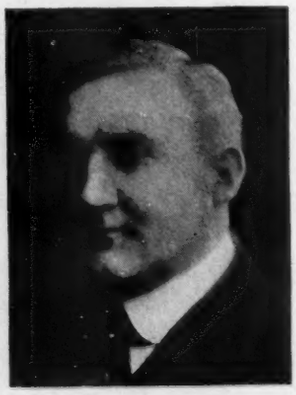
George Fritz has resigned as general manager of the Association of Automotive Equipment Manufacturers. Mr. Fritz has been associated with the industry since 1904, and is best known by his association with the A. E. A. as executive field secretary, and with the Research Club as general manager.

Thomas C. Huxley, Jr., has been announced as manager of the direct factory branch in New York City of the Diamond T Motor Car Co., of Chicago. He will have supervision of sales and service for the entire state of New York and surrounding territory.

F. E. Kaiser, manager of the replacement division of the Zenith Carburetor Co., of Detroit, has been transferred to the position of manager of the New York Branch at 692 11th St. F. E. Williams succeeds Mr. Kaiser in the replacement division.

S. Clyde Kyle will represent the Van Wheel Corp., Oneida, N. Y., with headquarters at the Rialto Bldg., San Francisco. The firm manufactures a hollow spoke metal wheel ranging from 30 x 3½ pneumatic types to 40 x 12 solid tire types.

Arthur M. Laycock will represent the Waukesha Motor Co., Waukesha, Wis., in the East, with offices at 110 West 42nd St., New York City. Mr. Laycock was formerly with the English Damler, London General Omnibus Co., and was general manager of the Fifth Avenue Coach Co., during the war. He has been chief engineer of the Sheldon Axle & Spring Co., for 11 years.



W. O. Rutherford

Vice-president of the Goodrich Rubber Co., who has been elected president of the Motor and Accessory Manufacturers' Association as well as vice-president of the Rubber Association of America.

THE BOOSTER'S PLEDGE

I agree to raise the level of the Automotive Industry by boosting the other fellow, keeping my promises, being truthful, inspiring confidence, playing clean, having a real policy, being ethical, rendering service, not misrepresenting and serving the service that serves by giving both manufacturers and jobbers a square deal.

Membership in the Boosters' Club, N. E. No. 1, will be restricted to 100, this limit having been set at the monthly meeting of the organization held in Boston, January 22, at which meeting there was a good attendance. Nine new members were elected, which brings the number close to the 90 mark and it is expected that by the time the annual meeting takes place, the limit will have been attained.

D. G. Caywood, treasurer, presided in the absence of T. F. Wilson, who missed his first meeting since the club was organized over two years ago. The report of Secretary Foster revealed that Dallas, Tex., had formed a Boosters' Club and that a representative of a New England concern had been chosen for the first president. The treasurer's report showed the organization was in a healthy financial condition.

Plans were discussed for the annual meeting which will be held at Boston Tuesday, March 13, during the week of the Boston Show.

As one of the objects of the organization is to bring about better salesmanship and merchandising methods, an effort will be made to introduce subjects and speakers at future meetings who can talk on various subjects. Trade data is to be presented and the views of the various factions given so that better co-ordination will result. The usual dinner followed the meeting.

* * *

Another Boosters organization was effected recently, the Southwest Boosters' Club No. 4 having been launched at Dallas, Texas. The other clubs are at Kansas City and Denver. The Dallas Club adopted the constitution and by-laws of the N. E. No. 1 and the Boosters' pledge.

The following officers were elected for a term of one year: President, M. L. Martin, representing the Apco Mfg. Co., Providence, R. I.; secretary, L. D. Tuttle, representing the Haines Mfg. Co., Rochester, N. Y.; treasurer, C. B. Williams, branch manager McQuay-Norris Mfg. Co., St. Louis. The following directors were chosen: F. C. Pruitt, Thermoid Rubber Co., Trenton, N. J.; Stafford Jones, Perfection Spring Co., Cleveland; R. C. Newton, Ireland Products, St. Louis; Clayton Hall, Stone Mfg. Co., Chicago; Herbert Cree, Multibestos Co., Walpole, Mass.; A. D. Graham, Jr., Atlas Axle Mfg. Co., Dallas. Members elected comprise J. Watt Davis, president, Motor Products Co., Dallas; L. E. Berry, representative, Black & Decker Mfg. Co., Baltimore; Joe Pender, Weaver Mfg. Co., Springfield; M. J. La Due, Manley Mfg. Co., York, Pa.

Personal Items

T. A. Mortimer, a veteran truck transportation man, has joined the Atterbury Motor Car Co., field organization as district sales manager of the eastern New York state territory with headquarters in Utica. The company states that this Atterbury-Mortimer combination makes a team of old timers that will help make the Atterbury 20th anniversary year a record breaker.

J. E. Pickens, who organized the advertising department of the Selden Truck Corp., and has been in charge of that department for the past four years, has resigned to take charge of the service and advertising department of the Sheffield-Fisher Co., Rochester, N. Y.

Earl V. Sala has been appointed distributor for the Lomar shock absorber for Toledo, O., and vicinity. He will operate under the name of Lomar Toledo Sales Co., 738 Nicholas Bldg., Toledo.

George R. Stevenson, formerly connected with the sales department of the Smith Wheel Inc., is now a member of the sales organization of the Van Wheel Corp., of Oneida, N. Y. Mr. Stevenson is well-known among truck manufacturing executives through his connections with Smith Wheel.

Thomas Wilkinson has been appointed manager of the Lee Tire & Rubber Company's newly established branch in San Francisco. His field will include dealers in Northern California, Nevada and the Hawaiian Islands.

Trade Changes

The Boone Tire & Rubber Co., of Chippewa Falls, Wis., was recently acquired at a bankrupt sale by the Wenstone Rubber Products Co., also of Chippewa Falls, who plans to put the plant in production within the next month.

Chanslor & Lyon Co., large Pacific Coast jobbers, are now installed in their own modern building at Polk and Ellis Sts., San Francisco, Calif.

The Eaken-Schroth Co., Akron, O., wholesale automobile accessories, has been purchased by the Shriber-Schroth Co., also of that city. The officers are: President, B. A. Shriber; vice-president, C. A. Schroth; vice-president and buyer, Geo. E. Olson.

Sayers & Scoville, Cincinnati, has taken the Lomar shock absorber as standard equipment on its hearses, ambulances and funeral vehicles.

Guy de la Rigaudiere

President of the Traveler Rubber Co., of Bethlehem, Pa., who has been elected president of the United and Globe Rubber Corp., which company recently absorbed the United and Globe Rubber Co., Trenton, N. J.

Replacement Table—Corrected Monthly

Including Piston Ring Sizes, Carburetor Sizes, Hose Sizes, Fan Belt Sizes, Brake Lining Sizes and Truck Frame Dimensions

Note: Under Carburetor Inlet Diameter Will be Found Either the Size of Main Air Intake or the Gasoline Fuel Line

Fan Belt Type: V—V-Shape, F—Flat, R—Round

Name, Model and Tonnage	ENGINE												BRAKE LINING								FRAME	
	Piston Rings		Carburetor			Upper Hose		Lower Hose		Fan Belt			Service				Emergency				Length	Width
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Acason R–1	4	1/4	1										11 1/2	3	1/4	2	11 1/2	3	1/4	2	112	34
Acason RB–1 1/2	4	1/4	1										11 1/2	3 1/2	1/4	2	11 1/2	3 1/2	1/4	2	112	34
Acason H–2 1/2	3	1/4	1 1/4										13 1/2	3 1/2	1/4	2	13 1/2	3 1/2	1/4	2	130	35
Acason L–3 1/2	3	1/4	1 1/4										16	3 3/4	1/4	2	16	3 3/4	1/4	2	163 3/4	35
Acason M–5	3	1/4	1 1/2										18	4 1/2	1/4	2	18	4 1/2	1/4	2	167 1/2	35
Ace, Series A–1 1/2	3	1/8	1	1	V	7	1 3/4	8	1 1/4	40 3/4	2	F	12	3 1/4	1/4	4	12	3 1/4	1/4	4	122 1/2	32
Ace, Series A–2	3	1/8	1 1/4	1 1/4	V	6 1/2	2	11	1 1/4	42 5/8	2	F	13 1/2	3 1/2	1/4	4	13 1/2	3 1/2	1/4	4	Opt	32
Ace 60–3	3	1/8	1 1/4	1 1/4	V	10	2	15	1 1/4	42 5/8	2	F	13 1/2	3 1/2	1/4	4	13 1/2	3 1/2	1/4	4	Opt	.....
Acme 20–1	3	1/8	1	1	H	11	2	11	2	38 3/4	3/4	V	11 1/2	2 1/2	1/4	4	11 1/2	2 1/2	1/4	4	110 1/4	34
Acme 30–1 1/2	3	1/8	1	1	V	11	2	11	2	38 3/4	3/4	V	12	3	1/4	4	12	3	1/4	4	110 1/4	34
Acme 40–2	4	1/8	1	1	V	8	1 1/2	11 1/2	1 1/2	40	1 1/4	F	12	3 1/4	1/4	4	12	3 1/4	1/4	4	123 1/2	34
Acme 40L–2	4	1/4	1 1/4	1 1/4	V	7	1 1/2	11	1 1/2	39 1/2	1 1/2	F	12	3 1/4	1/4	4	12	3 1/4	1/4	4	123 1/2	34
Acme 60–2 1/2	4	1/4	1 1/4	1 1/4	V	7	1 1/2	11	1 1/2	39 1/2	1 1/2	F	13	3 1/2	1/4	4	13	3 1/2	1/4	4	132 3/4	34
Acme 60L–3	4	1/4	1 1/4	1 1/4	V	11 1/2	1 1/2	11 1/2	1 1/2	41 3/4	1 1/2	F	13	3 1/2	1/4	4	1	3 1/2	1/4	4	140 1/8	34
Acme 90–4	4	1/4	1 1/4	1 1/4	V	10	1 1/2	13	1 1/2	41 3/4	1 1/2	F	15 1/2	3 3/4	1/4	4	15 1/2	3 3/4	1/4	4	150 1/4	36
Acme 90L	3	1/4	1 1/2	1 1/2	V	11	2	14	2	40 1/2	2	F	15 1/2	3 3/4	1/4	4	15 1/2	3 3/4	1/4	4	155	37
Acme 125–5	3	1/4	1 1/2	1 1/2	V	11	2	14	2	40 1/2	2	F	18	4	1/4	4	18	4	1/4	4	159 1/4	37
Armleder 21–1 1/2	4	1/4	1	1/8	V	12	1 3/4	16 1/2	1 1/4	31 1/2	2	F	11 1/2	3 1/4	1/4	4	11 1/2	3 1/4	1/4	4	Opt	32
Armleder 40B–1 1/2	4	1/4	1 1/4	1/8	V	9 1/2	2	11 1/2	1 1/4	33 1/4	2	F	13 1/4	3 1/2	1/4	4	13 1/4	3 1/2	1/4	4	Opt	32
Armleder 40C–1 1/2	3	1/4	1 1/4	1/8	V	8 1/2	1 1/4	11 1/2	1 1/4	34	1 1/4	F	13 1/4	3 1/2	1/4	4	13 1/4	3 1/2	1/4	4	Opt	32
Armleder KWB–3 1/2	4	1/4	1 1/4	1/8	V	12	2	16 1/2	1 1/4	35 1/4	2	F	37	3	1/8	1	16	3 3/4	1/4	8	Opt	36
Armleder KWC–3 1/2	3	1/4	1 1/4	1/8	V	10	1 1/2	16 1/2	1 1/4	35 3/4	2	F	37	3	1/8	1	16	3 3/4	1/4	8	Opt	36
Armleder HWB–2 1/2	4	1/4	1 1/4	1/8	V	9 1/2	2	11 1/2	1 1/4	33 1/4	2	F	13 1/4	3 1/2	1/4	4	13 1/4	3 1/2	1/4	4	Opt	32
Armleder HWC–2 1/2	3	1/8	1 1/4	1/8	V	8 1/2	1 1/4	11 1/2	1 1/4	34	1 1/4	F	13 1/4	3 1/2	1/4	4	13 1/4	3 1/2	1/4	4	Opt	32
Atco B–1 1/4	4	1/4	1	1	V	11	2	11	1 1/4	31 1/2	2	F	25 1/2	2 1/2	1/8	4	18	2 1/2	1/8	4	109 1/4	32
Atco B1–1 1/2	4	1/4	1	1	V	11	2	11	1 1/4	31 1/2	2	F	46	2 1/2	1/8	2	46	2 1/4	1/8	2	109 1/4	32
Atco A–2 1/2	4	1/4	1 1/4	1 1/4	V	12	2	11	1 1/4	33 1/4	1 1/4	F	25 1/2	2 1/2	1/8	4	18	2 1/2	1/8	4	124 1/4	33
Atlas 22–1	3	1/8	1	1/4	V	10	1 1/2	11	1	33 1/2	1 1/2	F	40	2	1/8	2	22 1/2	2 1/4	1/8	1	84 3/4	33 3/4
Atterbury 20R–1 1/2	4	1/8	1	3/8	....	8	1 1/2	14	1 1/2	38 11	1 1/4	F	11 1/8	3 1/4	1/4	4	11 1/8	3 1/4	1/4	4	122 1/2	34
Atterbury 22C–2 1/2	4	....	1 1/4	3/8	....	10 1/2	1 1/2	16	1 1/2	40 1/2	1 1/2	F	13 1/8	3 1/2	1/4	4	13 1/8	3 1/2	1/4	4	129 1/4	34
Atterbury 22D–3 1/2	4	....	1 1/4	3/8	....	10 1/2	1 1/2	16	1 1/2	40 1/2	1 1/2	F	15 1/8	3 3/4	1/4	4	15 1/8	3 3/4	1/4	4	142 3/4	37 1/2
Atterbury 8E–5	3	1/4	1 1/2	3/8	....	14	2	20 1/2	2	40	2	F	17 3/4	4	1/4	4	17 3/4	4	1/4	4	157 1/8	37 1/2
Autocar XXI–F–1 1/2	4	1/8	1 1/8	....	....	3–4	1 1/8	5	1 1/8	.....	.....	.....	16 1/4	2 1/2	1/8	4	13 1/2	2 1/2	1/8	4	91	34
Autocar XXI–G–1 1/2	4	1/8	1 1/8	....	....	3–4	1 1/8	5	1 1/8	.....	.....	.....	16 1/4	2 1/2	1/8	4	13 1/2	2 1/2	1/8	4	114	34
Autocar XXVI–3 1/2	3	1/4	1 1/8	....	....	3 1/2	1 1/2	3 1/2	1 1/2	49 1/4	2	F	25 1/2	2 3/4	1/4	4	25 1/2	2 3/4	1/4	4	140	34 1/2
Autocar XXVI–5	3	1/4	1 1/8	....	....	3 1/2	1 1/2	3 1/2	1 1/2	49 1/4	2	F	25 1/2	2 3/4	1/4	4	25 1/2	2 3/4	1/4	4	176	34 1/2
Autocar XXVII–4	3	1/4	1 1/8	....	....	3 1/2	1 1/2	3 1/2	1 1/2	47 1/4	2	F	22 5/8	2	1/4	4	22 5/8	2	1/4	4	131 1/2	34 1/2
Autocar XXVII–4	3	1/4	1 1/8	....	....	3 1/2	1 1/2	3 1/2	1 1/2	47 1/4	2	F	22 5/8	2	1/4	4	22 5/8	2	1/4	4	155 1/2	34 1/2
Available H–1 1/2	4	1/8	2 1/4	1 1/8	....	11	1 5/8	14	1 5/8	40	2	....	48	2 1/2	1/4	2	36	2 1/2	1/4	2	120	32
Available H–2 1/2	3	1/8	2 1/4	1 1/8	....	11	1 5/8	14	1 5/8	40	2	....	13 1/2	3 1/2	1/4	4	13 1/2	3 1/2	1/4	4	144	32
Available H3	3	1/8	2 1/2	1 1/8	....	11	1 5/8	14	1 5/8	42	2	....	16	3 3/4	1/4	4	16	3 3/4	1/4	4	168	36
Available H5	3	1/4	2 1/2	1 1/8	....	12	2	16	2	40	2	....	18	4	1/4	4	18	4	1/4	4	168	38
Available H2	4	1/8	2 1/4	1 1/8	V	12	1 5/8	14	1 5/8	40	2	F	48	2 1/2	1/4	2	36	2 1/2	1/4	2	120	32
Available H2 1/2	4	1/8	2 1/4	1 1/8	V	12	1 5/8	14	1 5/8	40	2	F	13 1/2	3 1/2	1/4	4	13 1/2	3 1/2	1/4	4	144	32
Available H3 1/2	4	1/8	2 1/2	1 1/8	V	12	1 5/8	14	1 5/8	42	2	F	16	3 3/4	1/4	4	16	3 3/4	1/4	4	168	36
Available H5	4	1/4	2 1/2	1 1/8	V	12	2	16	2	40	2	F	18	4	1/4	4	18	4	1/4	4	168	38
Avery 1	3	1/8	....	1	....	10	2	6 1/2	2	31 3/4	1 1/2	F	19 1/2	2	1/8	4	18 1/2	2	1/8	4	85	34
Bell M–1	4	1/8	1	1/8	V	10	2	10	1 1/2	32	2	F	36	2 1/2	1/8	1	42	3	1/4	1	110	34
Bell E–1 1/2	4	1/8	1	1/8	V	10	2	10	1 1/2	32	2	F	39	2 1/2	1/8	1	48	3	1/4	1	114	34
Bell O–2 1/2	4	1/8	1 1/4	1/8	V	10	2	10	1 1/2	32	2	F	48	2 1/2	1/8	1	54	3	1/4	1	126	34
Bessemer G–1	3	1/8	1	1/8	V	11 1/2	2 1/4	10	2 1/4	42	5/8	V	46	2 1/2	1/8	2	44	2 1/4	1/8	2	98 1/4	34
Bessemer H–2–1 1/2	3	1/8	1	1/8	V	11 1/2	2 1/4	10	2 1/4	43	5/8	V	16 3/8	2	1/4	8	16 3/8	2	1/4	8	116	34
Bessemer J2–2 1/2	3	1/8	1 1/4	1/8	V	12	1 1/2	5	1 1/2	36 1/4	1 1/4	F	18 3/8	2 1/4	1/4	8	18 3/8	2 1/4	1/4	8	142 1/8	34
Bessemer K2–4	3	1/8	1 1/4	1/8	V	11 1/2	2 1/4	10	2 1/4	39 3/8	1 1/2	F	55	3 1/2	1/4	2	33	4 1/2	1/4	1	157 1/2	38
Bethlehem KN–1	3	1/4	....	1	H	8 3/4	2 1/8	8	2 1/8	35 1/2	1 1/4	F	15 1/2	2 1/4	1/8	1	15	2 1/4	1/8	2	89 1/4	32 1/8
Bethlehem GN–2	3	1/4	....	1 1/4	H	8 1/2	2 5/8	9 1/2	2 5/8	40 1/8	1 1/2	F	16 7/8	2 1/2	1/8	1	12 1/4	2 1/2	1/8	1	116 3/4	34 1/2
Bethlehem HN–3	3	1/4	....	1 1/4	H	8 1/2	2 5/8	9 1/2	2 5/8	40 1/8	1 1/2	F	20	2 1/2	1/8	1	15 1/2	2 1/2	1/8	1	134 3/4	34 1/2
Brinton C–1 1/4	3	1/8	1 1/8	3/8	....	11	1 1/4	13	1 1/4	33	11	F	39	2 1/2	1/8	1	38	2 1/2	1/8	1	118	33
Brinton D–2 1/2	3	1/8	1 1/8	3/8	....	11	1 1/4	13	1 1/4	33	11	F	13	3 1/2	1/4	2	13	3 1/2	1/4	2	135 1/2	33
Brockway S2–1 1/2	3	1/8	1	....	V	10 1/2	2 1/4	5 1/2	2 1/4	39	1 1/4	F	20	2	1/4	4	20	2	1/4	4	118	32
Brockway K4–2 1/2	3	1/8	1 1/4	....	V	6 1/2	1 3/4	13	1 1/4	34	1 1/4	F	12	3 3/8	1/8	4	12	3 3/8	1/8	4	142	34
Brockway R–2–3 1/2	3	1/8	1 1/4	....	V	9 1/2	1 3/4	14	1 1/4	34	1 1/2	F	15 5/8	3 3/4	1/8	4	15 5/8	3 3/4	1/8	4	176	36
Brockway T–5	3	1/8	1 1/2	....	V	13	2	22	2	40 3/8	2	F	18	4	1/8	4	18	4	1/8	4	176	36
Brown Mydel B–2 1/2	3	1/4	1 1/4	1 1/4	H	8	2 1/4	14	1 1/4	34	2	F	.....	2 1/2	1/4	2	.....	2 1/2	1/4	2	126	39
Buffalo Tractor-Truck	4	1/8	1 1/4	1/8	V	7	1 3/8	13	1 3/8	41 1/2	2	F	21	2 1/4	1/4	4	21	2 1/4	1/4	4	124	34
Case	3	1/4	1 1/8	1 11	V	7	1 1/2	6	1 1/2	47 1/8	2	....	25 1/2	2 1/2	1/8	4	24 1/4	2 1/4	1/8	4	106	31
Chicago C–1 1/2	4	....	1	1 1/2	....	.....	.....	.....	.....	40	2	....	10	2 1/2	1/8	4	10	2	1/8	4	123	32
Chicago C–2 1/2	4	....	1 1/8	1 3/8	....	.....	.....	.....	.....	40	2	....	10	2 1/2	1/8	4	10	2	1/8	4	135	32
Chicago C–3 1/2	4	....	1 1/4	1 3/8	....	.....	.....	.....	.....	46	2	....	12	3 1/4	1/4	4	12	2 1/4	1/4	4	180	36 1/4
Chicago D–5	4	....	1 3/4	1 3/4	....	.....	.....	.....	.....	46	2	....	12	3 1/4	1/4	4	12	2 1/4	1/4	4	180	36 1/4
Climber A–20	3	1/8	1	1 1/4	H	17 1/2	1 1/2	17 1/2	1 1/2	32	1	F	16	2 1/4	1/8	2	16	2 1/8	1/8	1	120	34
Clydesdale 120B–5–6	3	1/4	1 11	1/8	V	9	2	18 1/2	2	46 1/2	2	F	18	4	1/8	4	18	4	1/8	4	131	38
Clydesdale 90–3 1/2–4 1/2	3	1/8	1 1/8	1/8	V	9	1 1/2	14	1 1/2	42	1 1/2	F	16	3 3/4	1/8	4	16	3 3/4	1/8	4	143	38
Clydesdale 65EX 2 1/2–3	3	1/8	1 1/8	1/8	V	9	1 1/2	14	1 1/2	42	1 1/2	F	13 1/4	3 1/2	1/8	4	13 1/4	3 1/2	1/8	4	132	33 1/4
Clydesdale 65X–2 1/2–3	3	1/8	1 1/8	1/8	V	11	1 1/2	11	1 1/2	40	1 1/2	F	13 1/4	3 1/2	1/8	4	13 1/4	3 1/2	1/8	4	137	33 1/4
Clydesdale 42–1 1/2–2	3	1/8	1 1/8	1/8	V	15	2	12	2	41	3/4	V	12	3 1/4	1/8	4	12	3 1/4	1/8	4	117	34
Clydesdale 20–1–1 1/2	3	1/8	1 1/8	1/8	V	15	2	12	2	41	3/4	V	11 1/4	3	1/8	4	11 1/4	3	1/8	4	95	34

Replacement Table—Continued

Name, Model and Tonnage	ENGINE												BRAKE LINING								FRAME	
	Piston Rings		Carburetor			Upper Hose		Lower Hose		Fan Belt			Service				Emergency				Length	Width
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Clydesdale 18–¾–1¼	3	1/4	1 1/4	1/4	V	15	2	12	2	41	5/8	V	11¼	2½	1/4	4	11¼	2½	1/4	4	95	34
Clydesdale 10–¾–1¼	3	1/4	1 1/4	1/4	V	9	2	9	2	41	5/8	V	11¼	2½	1/4	4	11¼	2½	1/4	4	109	34
Clydesdale 10A–1–¾–1¼	3	1/4	1 1/4	1/4	V	9	2	9	2	41	5/8	V	11¼	2½	1/4	4	11¼	2½	1/4	4	109	34
Commerce 9–1500	3	1/4	1	1/4	V	10	2	10	2	44	5/8	V	50	2	1/4	2	48½	2	1/4	2	92 5/8	34
Commerce T–1500	3	1/4	1	1/4	V	10	2	10	2	44	5/8	V	50	2	1/4	2	48½	2	1/4	2	92 5/8	34
Commerce 12–3000	3	1/4	1	1/4	V	10	2	10	2	44	5/8	V	45	2½	1/4	2	43	2¼	1/4	2	99 5/8	34
Commerce 16–4000	3	1/4	1	1/4	V	10	2	10	2	44	5/8	V	50¾	2½	1/4	2	48	2¼	1/4	2	108 5/8	34
Commerce 25B–5000	4	1/4	1¼	1/4	V	9½	1½	15½	1½	42	1½	F	13	3½	1/4	4	13	3½	1/4	4	132	34
Concord A–2	4	1/4	1¼	1/4	H	11	2 3/8	9½	1½	34	2	F	12	3¼	1/4	4	12	3¼	1/4	4	108¼	32¼
Concord AX–2	4	1/4	1¼	1/4	H	11	2 3/8	9½	1½	34	2	F	12	3¼	1/4	4	12	3¼	1/4	4	122¾	32¼
Concord B–3	4	1/4	1¼	1/4	H	11	2 3/8	9½	1½	34	2	F	13½	3½	1/4	4	13½	3½	1/4	4	122½	32¼
Concord BX–3	4	1/4	1¼	1/4	H	11	2 3/8	9½	1½	34	2	F	13½	3½	1/4	4	13½	3½	1/4	4	155 5/8	32¼
Corbitt S–¾	3	1/4	1	1/4	....	8	2	14	2	38	5/8	V	19	2	1/4	2	19	2	1/4	2	105	34
Corbitt D–1½	3	1/4	1¼	1/4	....	8	2	14	2	38	5/8	V	45¼	2	1/4	1	45¼	2	1/4	1	120	34
Corbitt C–2	3	1/4	1¼	1/4	....	14	1¼	13	1¼	36	1¼	F	51½	2¼	1/4	1	51½	2¼	1/4	1	138	35
Corbitt B–2½	3	1/4	1¼	1/4	....	14	1¼	13	1¼	36	1¼	F	51½	2¼	1/4	1	51½	2¼	1/4	1	138	35
Corbitt AA–5	3	1/4	1½	1/4	....	13	1¼	8	1¼	36	2	V	69¼	3	1/4	1	69¼	3	1/4	1	160	38
Corbitt A–4	3	1/4	1¼	1/4	....	13	2	14	2	36	1¼	V	64	2½	1/4	1	64	2½	1/4	1	160	35
Cyclone A–3000	3	1/4	1	1	V	16	2	16	2	32½	1¼	F	21¼	2½	1/4	4	19¾	2¼	1/4	4	113	34
Day-Elder AS–1	3	1/4	1¼	1½	V	9	2	9½	2	40	5/8	V	19	2	1/4	4	19	2	1/4	4	108	35
Day-Elder B–1½	3	1/4	1¼	1½	V	9	2	9½	2	40	5/8	V	19	2	1/4	4	19	2	1/4	4	120	35
Day-Elder D–2	3	1/4	1¼	1½	V	4	4	9	1 3/8	35	5/8	V	45	2	1/4	2	45	2	1/4	2	125	35
Day-Elder C–2½	3	1/4	1¼	1½	V	10½	2	12	1 3/8	36¾	2	F	52	2¼	1/4	2	52	2¼	1/4	2	123	35
Day-Elder F–3½	3	1/4	1½	1 3/8	V	6¾	1¾	12	1¼	35¼	1½	F	56½	2½	1/4	2	56½	2½	1/4	2	148	35
Day-Elder E–5	4	1/4	1½	1 3/8	V	12½	2	10	1 3/8	38½	1½	F	69	3	1/4	2	69	3	1/4	2	155	37
Dearborn BW–2	3	....	1	....	....	8¾	2	6	1 3/8	37	1	F	18	2½	1/4	2	18	1½	1/4	2	130	32
Dearborn F–1½	3	....	1	....	....	12	2	8	1 3/8	37	1	F	16½	2½	1/4	2	16½	1½	1/4	2	96½	34
Dearborn C–1	3	....	3/4	....	....	....	....	....	....	....	....	....	38	2	1/4	1	38	2	1/4	1	107	32
Defiance B–1½	3	1/4	1	1	V	10	2	8	2	40¾	1¼	F	45	2½	1/4	1	43 1/4	2¼	1/4	1	116	34
Defiance 48–2	3	1/4	1	1	V	10	2	8	2	40¾	1¼	F	54 1/4	2½	1/4	1	52½	2¼	1/4	1	116	34
Defiance D	3	1/4	1	1	V	10	2	8½	1¼	40¾	1¼	F	45	2½	1/4	1	43 1/4	2¼	1/4	1	120	34
Defiance E	3	1/4	1	1	V	10	2	8½	1¼	40¾	1¼	F	54 1/4	2½	1/4	1	52½	2¼	1/4	1	120	34
Defiance EL	3	1/4	1	1	V	10	2	8½	1¼	40¾	1¼	F	54 1/4	2½	1/4	1	52½	2¼	1/4	1	140	34
Denby 31–1¼	3	1/4	1	....	....	6	2 3/8	19	2 3/8	38½	1¼	F	49	2½	1/4	2	47½	2¼	1/4	2	97 5/8	34
Denby 33–2	3	1/4	1	1	....	9	2	12	2	41 1/4	5/8	V	8½	4	1/4	2	46½	1½	1/4	2	120	33¼
Denby 35–3	3	1/4	1¼	1¼	....	8	2	14¼	1¼	34¾	1¼	F	8½	4	1/4	2	51	3	1/4	2	143¾	33¼
Denby 27–4	3	1/4	1¼	1¼	....	13	1¾	16¼	1¼	38½	1½	F	8½	4	1/4	2	58	2½	1/4	2	140	34
Denby 210–5	3	1/4	1¼	1¼	....	13	1¾	16¼	1¼	38½	1½	F	8½	4	1/4	2	89	2¼	1/4	2	140	34
Dependable Dispatch A-1¼	4	1/4	1	1/4	V	14	2¼	15	1¼	37½	2	F	53¼	2¼	1/4	1	38¼	2¼	1/4	1	108	33½
Dependable C–2	4	1/4	1	1/4	V	14	2¼	15	1¼	37½	2	F	53½	2½	1/4	1	38½	2½	1/4	1	121	33
Dependable D–2½	4	1/4	1¼	1/4	V	10	2¼	11½	1¼	37½	2	F	53½	2½	1/4	1	38½	2½	1/4	1	140	33
Dependable E–3	4	1/4	1¼	1/4	V	10	2¼	11½	1¼	37½	2	F	63	2½	1/4	1	49	2½	1/4	1	152	33
Dependable G–3½	4	1/4	1¼	1/4	V	13	2	13	1¼	37½	2	F	63	2½	1/4	1	49	2½	1/4	1	170	33
Diamond T–03–1–1¼	3	1/4	1	1¼	V	9	1¼	6	1¼	35	2	F	48	2½	1/4	2	33	2½	1/4	2	100	34
Diamond T–FS&T–1½	3	1/4	1	1¼	V	9	1¼	6	1¼	35	2	F	11½	3¼	1/4	4	11½	3½	1/4	4	Opt	34
Diamond T–U–2½	3	1/4	1¼	1¼	V	9	1¼	6	1¼	35	2	F	13¼	3½	1/4	4	13¼	3½	1/4	4	Opt	34
Diamond TK–3½	3	1/4	1¼	1½	V	10	1½	10	1½	35	2	F	15⅝	3¾	1/4	4	15⅝	3¾	1/4	4	Opt	37
Diamond T–EL–5	3	1/4	1½	1½	V	10	1½	10	1½	35	2	F	18	4	1/4	4	17 11	4	1/4	4	Opt	37
Diamond T–S–5	3	1/4	1½	1¾	V	9	2	21	2	40⅜	2	F	18	4	1/4	4	17 11	4	1/4	4	Opt	37
Diehl A	3	....	1	1	....	....	....	....	....	....	....	....	28	2½	1/4	2	27	2	1/4	2	90	....
Dodge Brothers–¾	4	1/8	1 1/8	1/4	V	9	1½	7¼	1 1/8	34½	1	F	19¼	2¼	1/4	4	14⅜	1¾	1/4	4	43 11	38
D–Olt	3	1/4	1	1/4	H	18	2	18	2	36	1	F	54	3	1/4	2	42	3	1/4	2	240	34
Dorris K–4–2	3	1/4	1¼	1¼	V	2¼	1½	6¼	1¼	42⅞	2	F	13½	3½	1/4	4	13½	3½	1/4	4	142¾	34
Dorris K7–3½	3	1/4	1¼	1¼	V	2¼	1½	6¼	1¼	42⅞	2	F	15¾	3¾	1/4	4	15¾	3¾	1/4	4	178½	36
Dort 103 Series	3	1/4	1	1	H	6	2¼	15⅛	2¼	32½	1	F	35½	1¾	1/4	2	36	1¾	1/4	2	75	35¾
Douglas GW–1½	3	....	1¼	1/4	....	....	....	....	....	....	....	....	45	2½	1/4	2	44	2¼	1/4	2	118	31
Douglas G–1½	3	....	1¼	1/4	....	....	....	....	....	....	....	....	46	2½	1/4	2	44	2¼	1/4	2	118	31
Douglas H–2	3	....	1¼	1/4	....	....	....	....	....	....	....	....	55	2½	1/4	2	52	2¼	1/4	2	118	31
Douglas HW–2	3	....	1¼	1/4	....	....	....	....	....	....	....	....	54	2½	1/4	2	42	2¼	1/4	2	118	31
Douglas I–3	3	....	1¼	1/4	....	....	....	....	....	....	....	....	58	2½	1/4	2	44	2¼	1/4	2	132	31
Drake T–60	3	1/4	1¼	1½	V	9	1½	8	1¼	32	1¼	F	42¼	2½	1/4	1	37	2½	1/4	1	106	34
Duplex E–3½	3	1/4	1¼	1	....	....	....	....	....	....	....	....	9½	2½	1/4	2	5½	2½	1/4	2	126	39⅝
Duplex A	....	....	1¼	1½	....	....	....	....	....	....	....	....	....	2	....	4	....	2	....	4	121	34
Eagle 100–2	4	1/4	1¼	1	V	14	2	16	1¼	33⅜	1½	....	49½	3	1/4	1	46	2	1/4	1	Opt	36
Eugol 752–1	3	1/4	1¾	1/8	V	8	1¾	15½	1¼	32¾	1½	F	11	2½	1/4	2	11	2½	1/4	2	102	30
Fageol 1½–2	3	1/4	1 1/4	1½	V	15½	1¼	11½	1¼	31	5/8	V	19¼	1¾	1/4	2	19¼	1¾	1/4	2	120	30
Fageol 2½–3	3	1/4	1 1/4	1 11	V	10	1⅛	14¾	1¼	34¾	1½	F	13¼	3½	1/4	2	13¼	3¼	1/4	2	141	34
Fageol 3½–4	3	1/4	1⅝	2	V	9	1½	17½	1½	40½	1½	F	15½	3¾	1/4	2	15½	3¾	1/4	2	159½	37⅝
Fageol 5–6	3	1/4	1⅝	2	V	9	1½	17½	1½	40½	1½	F	18	4	1/4	2	18	4	1/4	2	161¼	37⅝
*Federal	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Ford T–1	3	1/4	1.06	1 1/4	H	4	2	.....	1¾	27	1 1/8	F	23⅜	1 1/8	1/4	1	12	1 1/8	1/4	2	60	23
Front Drive C–1½	4	1/4	1	1½	....	....	....	....	....	....	....	....	13	3	1/4	2	15	3	1/4	2	124	36
F. W. D. B–3	3	1/4	1 11	1/4	....	4	2	5	1½	40	1 1/8	F	27	3½	1/4	1	43	2¾	1/4	2	136	36
Garford 15–1	4	1/4	1	....	V	.....	.....	.....	.....	34	1½	F	11	2½	1/4	4	11	2½	1/4	4	96	34
Garford 25B–1½	3	1/4	1⅛	....	H	.....	.....	.....	.....	37 1/4	1	F	11¾	3¼	1/4	4	11¾	3¼	1/4	4	108	34
Garford 70H–2½	4	1/4	1⅛	....	V	.....	.....	.....	.....	34 1/4	2	F	13 1/4	3½	1/4	4	13 1/4	3½	1/4	4	121	34
Garford 77D–4	4	1/4	1⅛	....	V	.....	.....	.....	.....	39	2	F	15⅝	3¾	1/4	4	15⅝	3¾	1/4	4	144	36
Garford 68D–5	4	1/4	1½	....	V	.....	.....	.....	.....	41 1/4	2	F	17¾	4	1/4	4	17¾	4	1/4	4	150	36
Garford 150–A–7½	4	1/4	1½	....	V	.....	.....	.....	.....	41 1/4	2	F	10½	4	1/4	2	21⅜	4	1/4	4	150	36
Gary F–1–1½	4	1/4	1⅛	1/8	....	.....	.....	.....	.....	.....	.....	.....	11	3	1/4	2	11	3	1/4	4	97 5/8	34
Gary I–2	4	1/4	1⅛	1/8	....	.....	.....	.....	.....	.....	.....	.....	12	3¼	1/4	4	12	3¼	1/4	4	120	34
Gary J–2½	4	1/4	1⅛	1/8	....	.....	.....	.....	.....	.....	.....	.....	13½	3½	1/4	4	13½	3½	1/4	4	120	34
Gary K–3½	4	1/4	1½	1/8	....	.....	.....	.....	.....	.....	.....	.....	15	3¾	1/4	4	15	3¾	1/4	4	148	36¾
Gary M–5	4	1/4	1½	1/8	....	.....	.....	.....	.....	.....	.....	.....	18¼	4	1/4	4	18¼	4	1/4	4	168	39
Gersix K–2½	4	1/4	1¼	1¼	H	12	2	14	1¼	36	2	....	20	2½	1/4	4	47	2¼	1/4	4	131	34
Gersix M–1½	4	1/4	1¼	1¼	H	12	2	14	1¼	36	2	....	46	2	1/4	2	46	2	1/4	2	114	32
Gersix L–3	4	1/4	1¼	1¼	H	13½	2	16	1¼	36	2	....	56	2½	1/4	2	56	2½	1/4	2	144	36½
Giant 16–2½	3	1/4	1⅝	....	....	7½	1¼	11½	1¼	36½	3/4	F	13 1/4	3½	1/4	8	13 1/4	3½	1/4	8	140½	33
Giant 17–3½	3	1/4	1⅝	....	....	9½	1¼	12	1¼	36	3/4	V	15⅝	3¾	1/4	8	15⅝	3¾	1/4	8	183½	36
G.M.C. K–16	4	1/4	1⅛	1 1/8	V	8¾	1½	8 1/4	1½	35⅞	11	V	49½	2½	1/4	2	47	2½	1/4	2	89	34
G.M.C. K–20	4	1/4	1⅛	1⅛	V	10	1¼	9½	1¼	37⅞	11	V	49⅝	2⅝	1/4	2	47	2½	1/4	2	191	33
G.M.C. K–41	4	1/4	1¼	1⅛	V	10	1¼	9½	1¼	37⅞	11	V	13	3½	1/4	4	13	3½	1/4	4	Opt	33
G.M.C. K–71	4	1/4	1½	1⅛	V	11¾	1¼	9½	1¼	37⅞	11	V	15½	3¾	1/4	4	15½	3¾	1/4	4	Opt	38
G.M.C. K–101	4	1/4	1¼	1⅛	V	11¾	1¼	9½	1¼	37⅞	11	V	17¾	4	1/4	4	17¾	4	1/4	4	Opt	38
Graham Bros	3	1/4	1	1/4	V	9	1½	7¼	1¼	36	1	F	50	2½	1/4	1	20	1½	1/4	2	96¾	33½
Gramm-Pioneer 10 Speed–1	3	1/4	1	1½	V	12	2¼	14½	2¼	29	1	F	48	2	1/4	2	26	2	1/4	1	97	30½

* Federal replacement data, formerly appearing in these columns, has been eliminated at the specific request of the Federal Motor Truck Company.

Replacement Table—Continued

Name, Model and Tonnage	ENGINE												BRAKE LINING								FRAME	
	Piston Rings		Carburetor			Upper Hose		Lower Hose		Fan Belt			Service				Emergency				Length	Width
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Gramm-Pioneer 15–1½–2	3	⅛	1	1½	V	10¼	2	6	2	39	1¼	F	48½	2	⅛	2	45⅞	1½	⅛	2	120	32
Gramm-Pioneer 65–1½–2	3	⅛	1	1½	V	10¼	2	6	2	39	1¼	F	19¾	1¾	⅛	4	19¾	1¾	⅛	4	120	32
Gramm-Pioneer 20–2–2½	3	⅛	1¼	1½	V	4½	1½	12	1½	32			45	2	⅛	4	45	2	⅛	4	126	32
Gramm-Pioneer 30–3	3	¼	1¼	1½	V	11	1½	9	1½	33¾	2		22¾	2¼	¼	4	22¾	2¼	¼	4	129¾	36
Gramm-Pioneer 75P–3½	3	¼	1¼	1½	V	11	1½	9	1½	33¾	2		22¾	2¼	¼	4	22¾	2¼	¼	4	129¾	36
Gramm-Pioneer 40–4	3	¼	1¼	1½	V	11	1½	9	1½	33¾	2		28¾	2¾	¼	4	28¾	2¾	¼	4	144	36
Gramm-Pioneer 50–5–6	3	¼	1½	1¾	V	23¼	2	13¾	1⅞	40¾	2		32 11	2¾	¼	4	32 11	2¾	¼	4	132	36
G. W. W.	3	¼	1¾	1¾	V	12	1¾	11	1¾	37	2		49	2½	¼	2	47	1½	11	2	89	32
Hall 2-Worm–2½	3	⅛	.....	.....	.....	8	1¼	12½	1¼	32	1¼	F	11½	3	¼	4	11½	3	¼	4	144	38
Hall 3½-Worm	3	⅛	.....	.....	.....	12½	1¾	15½	1¾	38⅛	1½	F	15	3¾	¼	4	15	3¾	¼	4	180	39
Hall 5-Worm	3	⅛	.....	.....	.....	12½	1¾	15½	1¾	38⅛	1½	F	18	4	¼	4	18	4	¼	4	144	39
Hall 7-Chain	3	⅛	.....	.....	.....	12½	1¾	15½	1¾	38⅛	1½	F	18	4	¼	4	18	4	¼	4	144	39
Harvey WOA–2	4	¼	1¼	2	V	11	2	14	1¾	35⅝	2	F	45	2	¼	2	45	2	¼	2	139	32
Harvey WFB–2½	4	¼	1¼	2	V	11	2	14	1¾	35⅝	2	F	50	2¼	¼	2	50	2¼	¼	2	139	32
Harvey WHB–3½	4	¼	1½	2	V	12	2	14	1¾	35⅝	2	F	56½	2½	¼	2	56½	2½	¼	2	108	35
Harvey WFT–6	4	¼	1¼	2	V	11	2	14	1¾	35⅝	2	F	50	2¼	¼	2	50	2¼	¼	2	85	32
Harvey WHT–10	4	¼	1½	2	V	12	2	14	1¾	35⅝	2	F	56½	2½	¼	2	56½	2½	¼	2	93	35
Hawkeye O	4	⅛	.....	1	V	12	2	9	1¾	.....	1½	F	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hawkeye K	4	⅛	.....	1	V	12	2	9	1¾	.....	2	F	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hawkeye M	4	¼	.....	1¼	V	12	2¼	9	1½	.....	2	F	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hawkeye N	4	¼	.....	1¼	V	14	2½	12	1½	.....	2½	F	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hendrickson N–2½	3	¼	1¼	⅛	....	.....	.....	.....	.....	.....	.....	...	12	3½	⅛	4	12	3½	⅛	4	Opt	32½
Hendrickson M–3½	3	¼	1¼	⅛	....	.....	.....	.....	.....	.....	.....	...	16	3¾	⅛	4	16	3¾	⅛	4	Opt	36
Hendrickson K–5	3	¼	1½	⅛	....	.....	.....	.....	.....	.....	.....	...	18	4	⅛	4	18	4	⅛	4	Opt	38
Hurlburt A1½–2	3	....	1¼	1	....	.....	.....	.....	.....	.....	.....	...	22	2	⅛	2	22	2	¼	2	132	35½
Hurlburt B2½	3	⅛	1¼	1	....	.....	.....	.....	.....	.....	.....	...	24	2½	¼	2	23	2½	¼	2	154	34
Hurlburt C3½–4	3	¼	1½	1¼	....	.....	.....	.....	.....	.....	.....	...	26	3	¼	2	25	3	¼	2	144½	34
Hurlburt D5–5½	3	¼	1½	1¼	....	.....	.....	.....	.....	.....	.....	...	28	3	¼	2	27	3	¼	2	144½	34
Indiana 12–1½	3	¼	1	.....	....	17	1¼	14	1¼	38½	1	F	17½	2	⅛	4	17½	2	⅛	4	108	32
Indiana 20–2	3	¼	1¼	.....	....	6	1¼	13	1¼	26⅝	1½	F	44	2	¼	2	44	2	¼	2	126	33
Indiana 25–2½	3	¼	1¼	.....	....	6	1¼	13	1¼	26⅝	1½	F	51	2¼	¼	2	51	2¼	¼	2	138	33
Indiana 35–3½	3	¼	1½	.....	....	6	1¼	13	1¼	26⅝	1½	F	56	2½	¼	2	56	2½	¼	2	144	34½
Indiana 51–5	3	¼	1½	.....	....	10	1½	17½	1½	40½	1¾	F	68	3	¼	2	68	3	¼	2	156	37½
International S—2000 lbs.–Speed Tr	3	¼	1½	1¼	V	9¾	2¼	17¾	2¼	30¼	1		38	2	⅛	2	38	2	⅛	2	90	34
International 21–2000 lbs.	3	¼	1¼	1⅜	V	6	1½	3½	1⅛	38⅛	1⅛	F	43¾	2¼	⅛	2	43¾	2¼	⅛	2	75 11	34
International 31–3000 lbs.	3	¼	1¼	1⅜	V	6	1½	3½	1⅛	38⅛	1⅛	F	43¾	2¼	⅛	2	43¾	2¼	⅛	2	106½	34
International 41–4000 lbs.	3	¼	1¼	1⅜	V	6	1½	3½	1⅛	38⅛	1⅛	F	50⅝	2¼	⅛	2	50⅝	2¼	⅛	2	111 ⅛	32¼
International 52–Bus	4	¼	1¼	1⅜	V	9	2¼	14½	2	.....	.....	...	10¾	2¼	¼	4	50⅝	3	⅛	2	217⅜	34
International 61–6000 lbs.	4	¼	1¼	1⅜	V	9	2¼	14½	2	.....	.....	...	50⅝	2¼	⅛	2	50⅝	2¼	⅛	2	118 11	34
International 62 Tactor Truck	4	¼	1¼	1⅜	V	9	2¼	14½	2	.....	.....	...	50⅝	2¼	⅛	2	50⅝	2¼	⅛	2	118 11	34
International 101–10,000	4	¼	1¼	1⅜	V	9	2¼	14½	2	.....	.....	...	73 ⅛	2½	⅛	2	73 ⅛	2½	⅛	2	147⅝	34
International 102 Tractor Truck	4	¼	1¼	1¾	V	9	2¼	14½	2	.....	.....	...	73 ⅛	2½	⅛	2	73 ⅛	2½	⅛	2	147⅝	34
Jackson B–3½	3	⅛	1¼	1½	V	11	....	.....	....	32½	1¼	F	58½	3½	¼	2	.....	.....	.....	.....	150	36
Kalamazoo G–1	3	¼	2 ⅛	1 ⅛	....	15½	1½	8	1½	40	1½	F	50	2½	⅛	1	34	2½	⅛	1	120	32½
Kalamazoo LG	3	¼	2 ⅛	1 ⅛	....	6	1¼	16	1¼	39	1½	F	50	2½	⅛	1	34	2½	⅛	1	120	32½
Kalamazoo NH	3	¼	2 ⅛	1 ⅛	....	20	1¾	19½	1½	42	2	F	52	2¾	¼	1	52	2¾	¼	1	144	33
Kalamazoo HD	3	¼	2 ⅛	1 ⅛	....	20	1¾	19½	1½	42	2	F	52	2¾	¼	1	52	2¾	¼	1	120	33
Kalamazoo SK	3	¼	2 ⅛	1 ⅛	....	20	1¾	19½	1½	42	2	F	57	2½	¼	1	57	2½	¼	1	152	36
Kalamazoo OK	3	¼	2 ⅛	1 ⅛	....	20	1¾	19½	1½	42	2	F	68	3	¼	1	68	3	¼	2	152	36
Kearns H–1	3	⅛	1	⅛	H	16	2	16	2	33	1	F	42	2	⅛	1	21	2	⅛	2	90	34
Kearns N–1½	3	⅛	1	⅛	H	18	2	18	2	33	1	F	45	2½	⅛	1	22	2¼	⅛	2	120	34
Kelly-Springfield K34–1½	4	⅛	1	⅛	V	7	1½	13	1½	54½	1	V	17⅜	1⅞	⅛	4	17⅜	1⅞	⅛	4	138	34
Kelly-Springfield K35–2½	4	⅛	1	⅛	V	7	1½	13	1½	55½	1	V	16¾	1⅞	⅛	4	16¾	1⅞	⅛	4	138	34
Kelly-Springfield K38–2½	4	⅛	1	⅛	V	7	1½	13	1½	55½	1	V	17⅜	1⅞	⅛	4	17⅜	1⅞	⅛	4	138	34
Kelly-Springfield K40–3½	4	¼	1¼	⅛	V	5 ⅛	1⅝	24	1½	63⅝	1	V	21	2⅞	⅛	4	21	2⅞	⅛	4	145	38
Kelly-Springfield K41–3½–5	4	¼	1¼	⅛	V	5 ⅛	1⅝	24	1½	60⅝	1	V	3 ⅛	4½	¼	12	58	2½	⅛	2	144	36
Kelly-Springfield K42–3½	4	¼	1¼	⅛	V	5 ⅛	1⅝	24	1½	60⅝	1	V	27½	2¾	¼	4	27½	2¾	¼	4	144	36
Kelly-Springfield K50–5	4	¼	1¼	⅛	V	5 ⅛	1⅝	24	1½	63⅝	1	V	21	2⅞	⅛	4	21	2⅞	⅛	4	145	38
Kelly-Springfield K60–6	4	¼	1¼	⅛	V	5 ⅛	1⅝	24	1½	63⅝	1	V	21	2⅞	⅛	4	21	2⅞	⅛	4	145	38
Kelly-Springfield K61–5 to 7	4	¼	1¼	⅛	V	5 ⅛	1⅝	24	1½	60⅝	1	V	3 ⅛	4½	¼	12	58	2½	⅛	2	142	36
Keystone 40–2	3	¼	1	⅛	....	8	2⅛	8	2⅛	38	1	F	50½	3	¼	1	46¾	2	⅛	1	124	33
Kissel 1 Ton	3	⅛	....	1¼	....	12¼	1⅝	10	1½	46¾	2	F	11	3	¼	4	11	3	¼	4	102	34
Kissel-Utility 1½	3	⅛	....	1¼	....	12¼	1¾	10	1½	46¾	2	F	19	2	¼	4	19	2	¼	4	120	34
Kissel-Freighter 2	3	⅛	....	1¼	....	12¼	1¾	10	1½	49	2	F	14	3½	¼	4	14	3½	¼	4	144	34
Kissel-Heavy-Duty–3½	3	⅛	....	1¼	....	13¾	1¾	10	1½	52¼	2	F	56	2½	⅛	2	56	2½	⅛	2	156	36
Kleiber 1	3	⅛	1¼	1¼	....	13	1½	16	1¼	36	¾	....	12	3¼	¼	4	12	3¼	¼	4	120	34
Kleiber 1½	3	⅛	1¼	1¼	....	13	1½	16	1¼	38	1¼	....	45	3¼	¼	2	12	3¼	¼	2	132	34
Kleiber 2	3	⅛	1¼	1¼	....	13	1½	16	1¼	40	1¼	....	13½	3½	¼	4	13½	3½	¼	4	144	34
Kleiber 2½	3	⅛	1¼	1¼	....	13	1¾	16	1¼	40	1¼	....	14	3½	¼	2	13½	3½	¼	2	150	34
Kleiber 3½	3	⅛	1¼	1¼	....	13	1¾	16	1¼	40	1¼	....	16	3¾	¼	4	16	3¾	¼	4	156	38
Kleiber 5	4	¼	1½	1¼	....	13	1¾	16	1¼	43	1¼	....	18	4	¼	4	18	4	¼	4	168	38
Koehler D–1½	3	⅛	1	⅛	V	9¼	2	12½	2	37½	1¼	....	40	1¾	⅛	4	40	1¾	⅛	2	113¼	34
Koehler M–2½	4	⅛	1¼	⅛	V	5¼	1⅝	5¼	1¼	40¼	1¼	....	13	3½	¼	4	13	3½	¼	4	141¾	34
Koehler MCS–2½	4	⅛	1¼	⅛	V	5¼	1⅝	5¼	1¼	40¼	1¼	....	13	3½	¼	4	13	3½	¼	4	129¾	34
Koehler F–3½	4	⅛	1¼	⅛	V	9	1⅝	5¼	1¼	.....	.....	.....	15½	3¾	¼	4	15½	3¾	¼	4	139½	34
Koehler MT–5—Tractor 5	4	⅛	1¼	⅛	V	5¼	1⅝	5¼	1¼	40¼	1¼	....	13	3½	¼	4	13	3½	¼	4	.....	34
Lange B	3	⅛	1	1⅝	V	3½	2¼	11	2	36½	¾	F	30	2	¼	2	18	3	¼	4	114	37
Lange E–2½	3	¼	1	1⅝	V	9	1½	15½	1½	42	1½	F	18	3½	¼	4	18	3½	¼	4	138	33
Larrabee X2–1–1¼ Ton	3	⅛	1¼	1¼	V	6	1¼	14	1½	34	1¼	F	48	2	¼	2	48	2	⅛	2	108	34
Larrabee J4–1½–2¼ Ton	4	⅛	1	1½	V	6½	1¼	10	1½	41	1¼	F	24	2	¼	4	24	2	¼	4	108	34
Larrabee K4–2½–3½ Ton	4	¼	1¼	1¾	V	6	1½	11	1½	48	1½	F	27	2¼	¼	4	27	2¼	¼	4	Opt	34
Larrabee L4–3½–4½ Ton	4	¼	1½	1¾	V	6	1½	11	1½	48	1½	F	60	2½	¼	2	60	2½	¼	2	Opt	36
Larrabee W–5–7	4	¼	1½	2¼	V	8½	2	17½	2	44½	2	F	72	3	¼	2	72	3	¼	2	152	36
Luedinghaus K2	3	⅛	1¼	1 11	....	9	1¼	5	1¼	.....	1½	F	53.4	2½	¼	2	38½	2½	¼	2	120	34
Luedinghaus K2–LS	3	¼	1¼	1 11	....	9	1¼	5	1¼	.....	1½	F	53.4	2½	¼	2	38½	2½	¼	2	145½	34
Maccar L2	4	¼	1¼	1⅝	V	11¼	1⅝	17	1½	41½	½	F	11⅜	3¼	¼	4	11⅜	3¼	¼	4	130¼	34
Maccar HA	4	¼	1¼	1⅝	V	11¼	1½	17	1½	41½	1½	F	13 ⅛	3½	¼	4	13 ⅛	3½	¼	4	143⅝	34
Maccar H 2	4	¼	1¼	1⅝	V	9½	1½	15½	1½	41½	1½	F	13 ⅛	3½	¼	4	13 ⅛	3½	¼	4	141½	34
Maccar M–3	4	¼	1¼	1⅝	V	11¼	1½	15½	1½	41½	1½	F	14¾	3¾	¼	4	14¾	3¾	¼	4	155½	34
Maccar G	4	¼	1½	1⅞	V	10½	2	20½	2	40¾	2		18	4	¼	4	18	4	¼	4	166⅜	37½
MacDonald A–7½	4	¼	1½	...	V	12	2	21	1¼	35	2	F	70	3	¼	1	34	3	¼	1	.....	.....
Mack AB–1½, 2, 2½–Ton–Chain	3	⅛	1¼	1½	V	7¼	1½	5⅝	1¼	36⅝	1¼	F	12¼	4	¼	4	12	6	¼	4	Opt	33¼
Mack Dual Reduction–1½–2,2½	3	⅛	1¼	1½	V	7¼	1½	5⅝	1¼	36⅝	1¼	F	18¾	3½	¼	2	16½	2½	¼	2	Opt	33¼
Mack AB–Tractor 5 Ton	3	⅛	1¼	1½	V	7¼	1½	5⅝	1¼	36⅝	1¼	F	12¼	4	¼	2	16½	2½	¼	4	77	33½

Replacement Table—Continued

Name, Model and Tonnage	ENGINE											BRAKE LINING								FRAME	
	Piston Rings		Carburetor			Upper Hose		Lower Hose		Fan Belt			Service				Emergency				Length	Width
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Mack AC–3½ to 7½ Ton	3	¼	1½	1½	V	5¾	2¼	3¼	2	.....	.....	.....	16½	3	¼	4	20½	3½	¼	4	Opt	37½
Mack AC–Tractor 7 to 15 Ton	3	¼	1½	1½	V	5¾	2¼	3¼	2	.....	.....	.....	16½	3	¼	4	20½	3½	¼	4	87	37½
Mason Road King	3	¼	1⅝	....	V	11⅝	2	14⅛	1½	.....	1½	F	42	2¾	⅛	1	40⅝	2¾	⅛	1	84¾	30
Master JI–1½	4	¼	1¼	1	H	13½	2	12½	1½	30½	1	F	74½	2½	⅛	1	74½	2¼	¼	1	117¾	34½
Master JW–1½	4	¼	1¼	1	V	13½	2	12½	1¼	30½	1	F	12	3¼	¼	2	12	3¼	¼	2	Opt	34½
Master JD	4	¼	1¼	1	V	13½	2	12½	1¼	30½	1	F	8⅝	4½	⅛	2	53¼	3	⅛	2	Opt	34½
Master M–2½	4	¼	1¼	1	V	13½	2	12½	1¼	33	1¼	F	74	2½	⅛	1	74½	2¼	¼	1	117½	34
Master O 2½	4	¼	1¼	1	V	13½	2	11½	1¼	33	1¼	F	75½	2½	⅛	1	74½	2¼	¼	1	156½	34
Master W–2½	4	¼	1¼	1	V	13½	2	12½	1¼	31	1¼	F	13¼	3½	¼	2	13¼	3½	¼	2	117½	34
Master WL–2½	4	¼	1¼	1	V	13½	2	12½	1¼	31	1¼	F	13¼	3½	¼	2	13¼	3½	¼	2	156½	34
Master D–2½	4	¼	1¼	1	V	13½	2	12½	1¼	35	1¼	F	8⅝	4½	⅛	2	54	3	⅛	2	117½	34
Master DL–2½	4	¼	1¼	1	V	13½	2	12½	1¼	35	1¼	F	8⅝	4½	⅛	2	54	3	⅛	2	156½	34
Master DD–2½	4	¼	1¼	1	V	13½	2	12½	1¼	35	1¼	F	8⅝	4½	⅛	2	56¼	3	⅛	2	Opt	34
Master T–6 Tractor	4	¼	1¼	1	V	13½	2	12½	1¼	33	1½	F	74½	2½	⅛	1	74½	2¼	¼	1	72½	34
Master A–3½	4	¼	1½	1	V	13½	2	15	1¼	35	2	F	16	3¾	¼	2	16	3¾	¼	2	147¾	36¾
Master AL–3½	4	¼	1½	1	V	13½	2	15	1¼	35	2	F	16	3¾	¼	2	16	3¾	¼	2	183¾	36¾
Master E–3½	4	¼	1½	1	V	13½	2	15	1¼	35	2	F	13¼	6	¼	2	23	4	¼	4	147¾	36¾
Master Y–4	4	¼	1½	1	V	13½	2	15	1½	35	2	F	13¼	6	¼	2	23	4	¼	4	Opt	36¾
Master EL–3½	4	¼	1½	1	V	13½	2	15	1¼	35	2	F	13¼	6	¼	2	23	4	¼	4	183¾	36¾
Master B–5	4	¼	1½	1	V	13½	2	15	1½	37	2	F	13¼	4	¼	2	18	4	¼	2	162⅞	39
Master BL–5	4	¼	1½	1	V	13½	2	15	1½	37	2	F	13¼	4	¼	2	18	4	¼	2	186⅞	39
Master F–5	4	¼	1½	1	V	13½	2	15	1½	37	2	F	13¼	6	¼	2	23	4	¼	4	162⅞	39
Master FL–5	4	¼	1½	1	V	13½	2	15	1½	37	2	F	13¼	6	¼	2	23	4	¼	4	186⅞	39
Master DDT–6	4	¼	1½	1	V	13½	2	12½	1½	35	1¼	F	8⅝	4½	⅛	2	56¼	3	⅛	2	Opt	34½
Master DT–6 Tractor	4	¼	1¼	1	V	13½	2	12½	1¼	35	1¼	F	8⅝	4½	⅛	2	54	3	⅛	2	72⅛	43
Maxwell 1½	3	⅛	1	1	V	7¾	2½	3½	2½	36½	⅝	...	31	1½	⅛	1	19¾	1¾	⅛	1	102	36
Menominee Hurryton–1	3	¼	1¼	1¾	....	6	1½	12	1¼	40	1¼	F	11	2½	¼	4	11	2½	¼	4	102	33
Menominee H–1½	3	¼	1¼	1¾	....	.....	.....	.....	.....	.....	.....	.....	13½	3½	¼	8	.....	.....	.....	.....	122	32
Menominee D–2	3	¼	1¼	1¾	....	3	1¾	3	1½	37½	2	F	13½	3½	¼	8	42½	2½	⅛	2	146	32
Menominee HT–1¼	3	¼	1	1½	....	9¼	1¾	10½	1¼	33¾	1¼	F	47	2½	⅛	2	33¼	2½	⅛	2	102¾	32
Menominee RX–5	3	¼	1½	2	....	3	1¾	3	1¾	40¾	2	F	69	3½	⅛	2	52	2½	⅛	2	149	38
Menominee G–3½	3	¼	1¼	1¾	....	3	1¾	3	1¾	37¾	2	F	15⅝	3¾	¼	4	15⅝	3¾	¼	4	149	36
Moline 10	3	⅛	....	1¼	H	10½	2¼	4½	2¼	39½	2	F	21	2½	⅛	2	20	2¼	⅛	2	108	32
Moreland RR	3	¼	1	1½	H	8	1½	11¼	1½	34	1½	F	49	2½	¼	2	46	2½	¼	2	108	34
Moreland BX–1½	3	¼	1	1½	H	8	1½	11¼	1½	34	1½	F	12	3¼	¼	4	12	3¼	¼	4	108	34
Moreland EX–2	3	¼	1¼	1½	H	9	1½	13	1½	42	1½	F	12	3¼	¼	4	12	3¼	¼	4	132	34
Moreland AX–3	3	¼	1¼	1½	H	9	1½	13	1½	42	1½	F	13½	3½	¼	4	13½	3½	¼	4	174	34
Moreland RX–5	3	¼	1½	1¾	H	9	2	19	2	42	2	F	16	3¾	¼	4	16	3¾	¼	4	192	38
Napoleon 9–1	3	⅛	1	⅛	H	6½	2¼	14	2¼	39	1	F	21	4	⅛	1	30	2½	⅛	1	100¾	35¾
Napoleon 11–1½	3	⅛	1	⅛	H	6½	2¼	14	2¼	39	1	F	21	4	⅛	1	30	2½	⅛	1	100¾	35¾
Nash 2018–1–1½	4	¼	1¼	1¼	....	3	1½	7¾	1¼	36	1	F	49⅛	2	⅛	2	20	2½	⅛	1	104½	30½
Nash 3018–2–2½	4	¼	1¼	1¼	....	3	1½	.....	.....	44	1	F	50⅝	3	⅛	2	20	2½	⅛	1	118¼	31½
Nash 4017–2–2½	3	¼	1¼	1¼	....	7	1½	.....	.....	44	2	F	49¼	2½	¼	4	25	2½	¼	1	117½	38½
Nelson & LeMoon G–2	4	¼	1¼	⅛	V	9	1⅜	3½	1⅜	41¼	1¼	....	12	3¼	¼	2	12	3¼	¼	2	Opt	.....
Nelson & LeMoon G–3	4	¼	1¼	⅛	V	9	1⅜	3½	1⅜	41¼	1¼	....	13½	3½	¼	2	13½	3½	¼	2	Opt	.....
Nelson & LeMoon G–4	4	¼	1¼	⅛	V	9	1⅜	3½	1⅜	41¼	1¼	....	16½	3¾	¼	2	16½	3¾	¼	2	Opt	.....
Nelson & LeMoon G–5	4	¼	1½	⅛	V	12	2	6	2	40½	2	....	18	4	¼	2	18	4	¼	2	Opt	.....
Netco DK–2	3	⅛	1¼	1⅛	V	12	1½	16	1¼	40	1¼	F	13	3½	¼	4	13	3½	¼	4	142	34¼
Netco HL–2½–3	3	⅛	1½	1⅛	V	13	1½	16	1¼	41¼	1½	F	13	3½	¼	4	13	3½	¼	4	139	34¼
Niles E–2	3	⅛	1¼	1¾	V	8	1¼	11	1¼	30	¾	F	12	3¼	¼	2	12	3¼	¼	2	147	56
Niles H–2½	4	¼	1¼	1¾	V	12	2	10	1¼	35	2⅛	F	13	3½	¼	2	13	3½	¼	2	147	34¼
Noble A21–1¼	4	⅛	1	1⅛	....	10	1¾	12½	1¼	33½	1½	F	19	2	¼	4	19	2	¼	2	102	34
Noble B31–2	4	⅛	1	1⅛	....	7	1⅞	16½	1¼	34¼	1⅞	F	43	2	¼	2	43	2	¼	2	126	34
Noble D51–2½	4	¼	1¼	1⅛	....	9	2	12	1¼	34¼	1⅞	F	21	2¼	¼	4	21	2¼	¼	4	.....	34
Noble E71—3½	4	¼	1¼	1⅛	....	14½	2	16	1¼	34¼	1⅞	F	57	2½	¼	2	57	2½	¼	2	.....	36
Northway B–2–2	3	⅛	1⅛	1¾	V	5¼	2¼	13⅞	1¼	46	⅝	V	50½	2¼	¼	2	50½	2¼	¼	2	133	33
Northway B–3–3½	3	⅛	1⅛	1¾	V	5¼	2¼	13⅞	1¼	46	⅝	V	54	2½	¼	2	54	2½	¼	2	173	34½
Ogden A–2–¾	3	⅛	1	1	H	12	2	6	2	44	¾	V	11	2½	⅛	4	11	2½	⅛	4	108	33¾
Ogden D–1½	3	⅛	1	1	V	13	2	12	2	44	¾	V	10	3	⅛	4	10	3	⅛	4	120	33¾
Ogden E–2½	3	⅛	1¼	2	V	10	1⅛	14	1⅛	30	1¼	F	52	2¼	⅛	1	52	2¼	⅛	1	144	33¾
Ogden F–3½	3	¼	1¼	2	V	11	1½	16	1½	36	1½	F	15⅝	3¾	¼	4	10⅜	3¾	¼	4	168	37
Ogden G–5	3	¼	1½	3	V	9	2	18	2	40	2	F	11	6	¼	2	25	4	¼	4	168	37
O. K.–1½	4	¼	1¼	1	V	12	2	13½	1¼	36	2	F	53	2½	⅛	2	38	2½	⅛	2	117	34
O. K.–2½	4	¼	1¼	1	V	12	2	13½	1¼	36	2	F	62	2½	⅛	2	48	2½	⅛	2	121	35
O. K.–3½	4	¼	1¼	1	V	12	2	13½	1¼	38	2	F	62	2½	⅛	2	48	2½	⅛	2	133	34
Old Reliable B–2½	3	¼	1¼	1¼	....	.....	.....	.....	.....	.....	.....	....	54	2	¼	1	54	2	¼	1	144	32
Old Reliable C–3½	3	¼	1½	1½	....	.....	.....	.....	.....	.....	.....	....	60	2½	¼	1	60	2½	¼	1	150	32
Old Reliable D–5	3	¼	1½	1½	....	.....	.....	.....	.....	.....	.....	....	72	3	¼	1	72	3	¼	1	156	36
Old Reliable K. L. M.–7	3	¼	1½	1½	....	.....	.....	.....	.....	.....	.....	....	54	3½	¼	1	60	4	¼	1	158	36
Oldsmobile T–1	3	⅛	1⅛	1¾	V	5	1¼	11	1¼	37	¾	V	42¼	2	⅛	1	41	2	⅛	1	92⅝	34
Olympic A–2½	4	¼	1¼	1½	V	13	2	12	1¼	34	2	F	13½	3½	¼	2	13½	3½	¼	2	Opt	32½
Oneida B9–2	3	⅛	1¼	1½	H	9½	1¼	9½	1¼	38½	2	F	48	2½	⅛	2	34	2½	⅛	2	114	34
Oneida C9–2½	3	⅛	1¼	1½	H	9¼	1¼	9½	1¼	38½	2	F	58	2½	⅛	2	43	2½	⅛	2	138	34
Oneida D9–3½	3	¼	1¼	1½	H	7	1½	9½	1½	40	2	F	16	3¾	¼	4	16	3¾	¼	4	157	36
Oneida E9–5	3	¼	1¼	1½	H	7½	1¾	9½	1½	40	2	F	18	4	¼	4	18	4	¼	4	177	38
Oshkosh A–2	3	⅛	1¼	1½	H	16	2	17	2	33¼	1¼	F	23⅝	3½	¼	1	43½	2½	¼	2	108	34
Oshkosh AA–2	3	⅛	1¼	1½	H	16	2	17	2	33¼	1¼	F	23⅝	3½	¼	1	43½	2½	¼	2	144	34
Oshkosh B–2½	4	⅛	1¼	1¾	V	9¾	1½	12	1½	36½	2	F	23⅝	4½	⅝	1	43½	2½	¼	2	125	34
Oshkosh BB2½	4	⅛	1¼	1¾	V	9¾	1½	12	1½	36½	2	F	23⅝	4½	⅝	1	43½	2½	¼	2	144	34
Packard EC	3	¼	1⅝	1¾	V	6¼	1½	10⅜	1½	41	⅝	V	7	4¾	¼	2	14	2	⅛	4	132	31¾
Packard ED	3	¼	1⅝	1¾	V	6¼	1½	10⅜	1½	43	⅝	V	9	4¾	¼	2	17	3	⅛	4	144	39
Packard EF	3	¼	1⅝	1¾	V	6¼	1½	10⅜	1½	43	⅝	V	9	6½	¼	2	18¾	3½	⅛	4	144	39
Packard EX	3	¼	1⅝	1¾	V	6¼	1½	10⅜	1½	41	⅝	V	7	4¾	¼	2	14	2	⅛	4	132	31¾
Paige 54–20–2½	3	¼	....	1¼	....	10½	1½	10½	1½	37⅝	1¼	F	49⅝	2¼	¼	2	49⅝	2¼	¼	2	126	33
Paige 51–18–3½	3	¼	....	1¼	....	13	1½	13	1½	37⅝	2	F	15⅝	3¾	¼	4	15⅝	3¾	¼	4	144	35
Paige 52–19–1½	3	⅛	....	1¼	....	8	1¼	12	1¼	36	2	F	11	3¼	¼	4	11	3¼	¼	4	126	33
Parker B–23	3	⅛	1	1¼	V	9	2	6	1¾	32	1½	F	42	2¾	¼	2	42	2¾	⅛	2	94½	33
Parker E–23	3	⅛	1¼	1½	V	4	1¼	16	1¼	37¾	1¼	F	11¾	3¼	¼	4	11¾	3¼	¼	4	113½	33
Parker G1–2½	3	¼	1¼	1½	V	19	1¾	16½	1½	38	2	F	10¼	5	¼	2	19	2½	¼	4	127	33
Parker J20–3½	3	¼	1¼	1½	V	19	1¾	16½	1½	38	2	F	10¼	5	¼	2	19	3½	¼	4	139½	33
Parker M20–5	3	¼	1½	1¾	V	14	1¾	18	1¾	40½	2	F	10¾	5	¼	2	24½	4	¼	4	145	37
Patriot Revere–1	3	⅛	1⅛	⅜	H	8	2	9	2	39	1¼	F	40½	1¾	⅛	1	40½	1¾	⅛	1	93	33¾
Patriot Lincoln Special–2	3	⅛	1⅛	⅜	V	6	1¼	8	1½	37	1¾	F	40½	1¾	⅛	1	40½	1¾	⅛	1	113	34
Patriot Washington Special–3	3	¼	1⅛	⅜	V	11	1½	10	2	39	2	F	58	2½	¼	1	43	2½	¼	1	150	34
Pierce Arrow–2–X–5	3	⅛	1⅛	1⅝	V	16⅜	2⅜	14¼	2⅛	43½	1½	F	22¼	2¼	¼	4	22¼	2¼	¼	4	125	34½
Pierce Arrow–3½–W–2	3	⅛	1⅛	1⅝	V	11	2⅜	15½	2⅛	43½	1½	F	9	6	¼	2	18	4¾	⅛	4	133¼	38½

Replacement Table—Continued

Name, Model and Tonnage	ENGINE												BRAKE LINING								FRAME	
	Piston Rings		Carburetor			Upper Hose		Lower Hose		Fan Belt			Service				Emergency				Length	Width
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Pierce Arrow–5–R–10	3	1/4	1 11/16	1 7/16	V	11	2 3/16	15 1/2	2 1/8	43 1/2	1 1/2	F	9 11/16	6	1/4	2	20 7/8	4 3/4	1/4	4	139 1/4	38 1/4
Pioneer 59AA–1	3	1/4	1 1/4	1 1/2	V	13	2	12	2	35	1	F	14	1 3/4	1/4	4	14	1 3/4	1/4	4	102	30
Pittsburgher 2 1/2	3	1/4	1 1/4	1 1/4	V	6	1 1/2	12	1 1/4	37	1	F	52	2 1/4	1/4	2	52	2 1/4	1/4	2	136	33
Power F–2	3	1/4	.....	.....	.....	8	1 1/4	12 1/4	1 1/4	39 3/4	2	F	26	2	1/4	4	26	2	1/16	4	143	32
Rainier R–28–2	3	1/4	1 1/16	1/4	V	5	1 1/2	13	1 1/2	31 1/2	1 1/4	F	44 1/2	2	1/4	1	44 1/2	2	1/4	1	.....	34
Rainier R26–1 1/2	3	1/4	1 1/16	1/4	V	9 3/4	1 1/2	14 3/4	1 1/2	41	1 1/2	F	19	2	1/4	2	19	2	1/4	2	113	34
Rainier R–29–1	3	1/4	1 1/16	1/4	V	8 1/2	1 1/2	14	1 1/2	41	1 1/2	F	19	2	1/4	2	19	2	1/4	2	100	34
Rainier R–21–3/4	3	1/4	1 1/16	1/4	V	9	1 1/2	14 1/2	1 1/2	42	1 1/2	F	11 1/4	3	1/4	2	11 1/4	3	1/4	2	90	34
Reliance 10A–1 1/2	4	1/4	1 1/4	5/8	V	10 1/2	2	13 1/2	1 3/8	35	2	F	17	2	1/4	4	17	2	1/4	4	122	32
Reliance 20B–2 1/2	4	1/4	1 1/4	5/8	V	10 1/2	2	13 1/2	1 3/8	35	2	F	17	2	1/4	4	17	2	1/4	4	127	32
Reo F–2500 lbs	3	1/4	1	1 1/4	V	5 1/2	1	5 1/2	1	39 1/4	7/8	F	43	2 1/4	1/4	1	39 5/8	2	1/4	1	81 1/16	30
Republic 10-1-10E-1	3	1/4	1	.....	V	12 1/4	2	6	2	40 1/4	1 1/4	F	21 1/4	2 1/2	1/4	4	19 3/4	2 1/4	1/4	4	.....	34
Republic 11X–1 1/2	3	1/4	1	.....	V	12 1/4	2	6	2	40 1/4	1 1/4	F	25 1/4	2 1/2	1/4	4	24 1/4	2 1/4	1/4	2	118	34
Republic 19–2 1/2	3	1/4	1 1/4	.....	V	8	1 1/2	11 3/4	1 1/4	32 1/4	1 1/4	F	25 1/4	2 1/2	1/4	4	24 1/4	2 1/4	1/4	2	121	34
Republic 20–3 1/2	3	1/4	1 1/4	.....	V	7 1/4	1 3/4	5 1/2	1 1/4	36 1/4	1 1/2	F	55 3/4	3 1/2	1/4	2	30 11/16	4 1/2	1/4	1	146	37
Republic Rapid Transit–3/4	3	1/4	1	.....	V	12	2 1/4	18 1/2	2 1/4	31 11/16	1	F	19	2	1/4	4	18	2	1/4	4	95	31
Reynolds 23A–2	3	1/4	1 1/4	1 11/16	V	10 1/2	1 1/2	10 1/2	1 1/2	35	2	F	24	2 1/2	1/4	4	24	2 1/2	1/4	4	136	33
Reynolds 23B–3	3	1/4	1 1/4	1 11/16	V	10 1/2	1 1/2	10 1/2	1 1/2	35	2	F	24	2 1/2	1/4	4	24	2 1/2	1/4	4	156	33
Reynolds 23C–25-pas. Bus	3	1/4	1 1/4	1 11/16	V	10 1/2	1 1/2	10 1/2	1 1/2	35	2	F	Opt	2 1/2	1/4	2	27	2 1/2	1/4	2	220	53 1/16
Rowe CW–1 1/2	3	1/4	1 1/4	1/4	.....	10 1/2	1 3/4	10 1/2	1 1/4	32 1/2	1 1/16	F	19	2	1/4	4	19	2	1/4	4	113	33
Rowe CDW–2	3	1/4	1 1/4	1/4	.....	10 1/2	1 3/4	10 1/2	1 1/2	32 1/2	1 1/16	F	24	2 1/2	1/4	4	24	2 1/4	1/4	4	123	33
Rowe CDW–2 1/2	4	1/4	1 1/4	1/4	V	20	1 3/4	15 1/2	1 1/2	32 1/2	1 1/16	F	24	2 1/2	1/4	4	24	2 1/2	1/4	4	123	33
Rowe GSW–3	3	1/4	1 1/4	1/4	.....	20	1 3/4	15 1/2	1 1/2	36 1/4	2	F	24	2 1/2	1/4	4	24	2 1/2	1/4	4	123	33
Rowe HW–4	3	1/4	1 1/4	1/4	.....	20	1 3/4	15 1/2	1 1/2	36 1/2	2	F	24	2 1/2	1/4	4	24	2 1/2	1/4	4	140	33
Rowe FW–5	3	1/4	1 1/4	1/4	.....	20	1 3/4	15 1/2	1 1/2	36 1/2	2	F	56 1/2	2 1/2	1/4	2	56 1/2	2 1/2	1/4	2	146	36
Rowe GPW–3	3	1/4	1 1/4	1/4	.....	10	1 3/4	6	1 3/4	36 3/4	2	F	68	3	1/4	2	68	3	1/4	2	153	38 1/16
Rumely A–1 1/2	4	1/4	1 1/16	1 1/16	V	10 1/2	1 3/4	10 1/2	1 1/4	37	2	F	18	2	1/4	4	18	2	1/4	4	122	34
Samson 15–3/4	3	1/4	1 1/4	1 5/16	V	6 1/2	1 1/4	7 3/4	1 1/4	35 11/16	11/16	V	37	2	1/4	1	35 3/4	1 3/4	1/4	1	108 1/4	39 1/2
Samson 25–1 1/4	3	1/4	1 1/16	1 3/16	V	6 1/2	1 1/4	7 3/4	1 1/4	37 11/16	11/16	V	43 1/2	2	1/4	1	37 1/16	1 3/4	1/4	1	108 3/4	39 1/2
Sanford W15–1 1/2	3	1/4	1	1	H	9	2 1/4	11	1 1/2	40	5/8	V	22 1/4	2 1/4	1/4	4	22 1/4	2 1/4	1/4	4	120	32
Sanford 25–2 1/2	3	1/4	1 1/4	1 1/4	V	8	1 1/2	11	1 1/2	32	1 1/2	F	22 1/4	2 1/4	1/4	4	22 1/4	2 1/4	1/4	4	144	35
Sanford 35–3 1/2	3	1/4	1 1/4	1 1/4	V	9	2 1/4	11	1 1/2	32	1 1/2	F	55 3/4	2 1/2	1/4	2	55 3/4	2 1/2	1/4	2	144	35
Sanford 50–5	3	1/4	1 1/4	1 1/4	V	9	2 1/4	11	1 1/2	32	1 1/2	F	65	2	1/4	2	65	2	1/4	2	144	35
Schacht F–2	4	1/4	1 1/4	2	H	11	2	14	1 1/4	37 1/2	2	F	8 1/4	3	1/4	4	13 1/2	3	1/4	4	140	35 1/4
Schacht F–3	4	1/4	1 1/4	2	H	11	2	14	1 1/4	37 1/2	2	F	8 1/4	3	1/4	4	13 1/2	3	1/4	4	140	35 1/4
Schacht E–4	4	1/4	1 1/4	2	H	10 1/2	2	13 1/2	1 1/4	39 1/4	7/8	V	8 1/4	3	1/4	4	15	4	1/4	4	140	35 1/4
Schacht E–5	4	1/4	1 1/4	2	H	10 1/2	2	13 1/2	1 1/4	39 1/4	7/8	V	8 1/4	3	1/4	4	15	4	1/4	4	152	35 1/4
Schacht E–7	4	1/4	1 1/4	2	H	10 1/2	2	13 1/2	1 1/4	39 1/4	7/8	V	8 1/4	3 1/4	1/4	4	15	4	1/4	4	152	35 1/4
Schwartz A–1	3	1/4	1	1/4	V	9 1/2	2 1/4	13	2 1/4	29 1/2	7/8	F	15 5/16	1 3/4	1/4	4	15 5/8	1 3/4	1/4	4	.....	.....
Schwartz K–2	4	1/4	1	1/4	H	10	1 3/4	18	1 1/4	33 1/16	2	F	20 1/4	2 1/4	1/4	4	20 1/4	2 1/4	1/4	4	120	34
Schwartz LS–L–LL–3	4	1/4	1 1/4	1/4	H	10 1/2	2	15	1 1/4	33 1/8	2	F	51 1/2	2 1/4	1/4	2	51 1/2	2 1/4	1/4	2	.....	34
Schwartz MS–M–ML–5	4	1/4	1 1/4	1/4	H	12 1/2	2	17	1 1/4	38 3/8	2	F	69 1/2	3	1/4	2	69 1/2	3	1/4	2	.....	36
Selden Unit 30	3	1/4	1	1 1/16	V	12	2	.....	.....	41	1 1/4	F	11 1/16	3 1/4	1/4	4	11 1/16	3 1/4	1/4	4	114	34
Selden Unit 50	3	1/4	1	1 1/16	V	3 3/4	1 1/4	12	1 1/4	31	1 1/2	F	13	3 1/2	1/4	4	13	3 1/2	1/4	4	134	34
Selden Unit 31	3	1/4	1	1 1/16	V	3 3/4	1 1/4	12	1 1/4	31	1 1/2	F	13	3 1/2	1/4	4	13	3 1/2	1/4	4	134	34
Selden Unit 70	3	1/4	1 1/4	1 1/16	V	9	1 3/4	5 1/2	1 3/4	34 1/4	2	F	15 5/8	3 3/4	1/4	4	15 5/8	3 3/4	1/4	4	153	37 1/2
Selden Unit 51	3	1/4	1 1/4	1 1/16	V	7 1/2	1 1/2	15 1/2	1 1/4	31 1/2	2	F	13	3 1/2	1/4	4	13	3 1/2	1/4	4	134	34
Selden Unit 90	3	1/4	1 1/2	1 1/16	V	7	1 3/4	16 3/4	1 1/2	40 3/8	2	F	17 11/16	4	1/4	4	17 11/16	4	1/4	4	153	37 1/2
Service 12–3/4	3	1/4	1 1/16	1 1/16	V	13 1/2	2 1/2	14 1/2	2 1/2	35 1/2	1 1/4	F	10 1/16	2 1/2	1/4	4	10 1/16	2 1/2	1/4	4	101 1/2	37 1/16
Service 25–1 1/4	3	1/4	1 1/16	1 1/2	V	12 1/2	1 3/4	13	1 1/4	32 3/8	1 1/2	F	19 3/8	1 3/4	1/4	4	19 3/8	1 3/4	1/4	4	106 3/4	32
Service 21–1 1/2	3	1/4	1 1/4	1 1/4	H	10	2	6	1 3/4	37 3/4	1	F	12	3 1/4	1/4	2	12	3 1/4	1/4	2	109 1/2	34
Service 32–2	4	1/4	1 1/16	1 1/16	V	10	2	8	1 1/4	33	1 1/4	F	12	3 1/4	1/4	2	12	3 1/4	1/4	2	121 1/16	34
Service 37–2	4	1/4	1 1/16	1 1/16	V	10	2	8	1 1/4	33	1 1/4	F	12	3 1/4	1/4	2	12	3 1/4	1/4	2	121 1/16	34
Service 52–3	4	1/4	1 1/16	1 1/16	V	10	2	8	1 1/4	33	1 1/4	F	13 1/2	3 1/2	1/4	2	13 1/2	3 1/2	1/4	2	131 1/2	34
Service 72–3 1/2	4	1/4	1 1/16	1 1/16	V	10	2	8	1 1/4	33	1 1/4	F	16	3 3/4	1/4	2	16	3 3/4	1/4	2	150 1/4	38
Service 77–4	4	1/4	1 1/16	1 1/16	V	10	2	10	1 1/4	38 1/4	1 1/2	F	16	3 3/4	1/4	2	16	3 3/4	1/4	2	145 3/4	38
Service 102–6	4	1/4	1 1/16	1 1/16	V	10	2	10	1 1/4	38 1/4	1 1/2	F	18 1/2	4	1/4	2	18 1/2	4	1/4	2	145 3/4	38
Signal NF–1	4	1/4	1 1/16	1 1/16	V	7 1/4	1 1/2	12	1 1/2	39 3/4	1 1/4	F	11	3	1/4	4	11	3	1/4	4	112	34
Signal H 1 1/2	3	1/4	1 1/16	1 1/16	V	8	1 1/2	9	1 1/4	30 1/2	1 1/4	F	11 3/4	3 1/4	1/4	4	11 3/4	3 1/4	1/4	4	120	34
Signal J–2 1/2	3	1/4	1 1/16	1 1/16	V	10	1 1/2	12	1 1/4	30 1/2	1 1/4	F	13 3/8	3 1/2	1/4	4	13 3/8	3 1/2	1/4	4	126	34
Signal M 3 1/2	3	1/4	1 1/16	1 1/16	V	5 1/2	1 1/2	12	1 1/4	34 1/4	1 1/4	F	15 3/4	3 3/4	1/4	4	15 3/4	3 3/4	1/4	4	168	38
Signal R–5	3	1/4	1 1/16	1 1/16	V	8	2	16	2	41	2	F	18 7/8	4	1/4	4	18 7/8	4	1/4	4	172	38
Standard 75–1 1/4	3	1/4	1	1 1/16	H	10 1/2	2 1/16	14 3/4	1 1/16	39 1/4	1 1/4	F	11 3/4	2 1/2	1/4	4	11 3/4	2 1/2	1/4	4	108	32
Standard 1 1/4K–1–1 1/2	3	1/4	1	1 1/16	V	10 1/2	2 1/16	14 3/4	1 1/16	39 1/4	1 1/4	F	10 7/8	3	1/4	4	10 7/8	3	1/4	4	120	32
Standard 2 1/2K–2 1/2–3	3	1/4	1 1/4	1 1/16	V	10	1 7/8	16	1 7/8	40 7/8	1 1/2	F	13 1/16	3 1/2	1/4	4	13 1/16	3 1/2	1/4	4	132	32
Standard 3 1/2K–3 1/2–5	3	1/4	1 1/4	1 1/16	V	10	1 7/8	16	1 7/8	41 1/2	1 1/2	F	15 5/8	3 3/4	1/4	4	15 5/8	3 3/4	1/4	4	144	38
Standard 5K–5–7	3	1/4	1 1/2	1 1/16	V	8	1 7/8	3 1/2	1 7/8	42 1/4	1 3/4	F	17 11/16	4	1/4	4	17	4	1/4	4	144	38
Sterling 1 1/2	3	1/4	1 3/4	1/4	V	11	1 1/2	19	1 1/2	38	1 1/2	F	11 3/4	3 1/4	1/4	4	11 3/4	3 1/4	1/4	4	120	33 1/2
Sterling 2	3	1/4	1 3/4	1/4	V	11	1 1/2	19	1 1/2	38	1 1/2	F	13 3/8	3 1/2	1/4	4	13 3/8	3 1/2	1/4	4	120	33 1/2
Sterling 2 1/2	3	1/4	1 3/4	1/4	V	11	1 1/2	19	1 1/2	38	1 1/2	F	13 3/8	3 1/2	1/4	4	13 3/8	3 1/2	1/4	4	138	34
Sterling 3 1/2	3	1/4	1 3/4	1/4	V	11	1 1/2	19	1 1/2	38	1 1/2	F	15 3/4	3 3/4	1/4	4	15 3/4	3 3/4	1/4	4	144	38
Sterling 5-Worm	3	1/4	1 1/2	1/4	V	13 5/16	1 1/2	22	1 1/2	40 1/16	1 1/2	F	17 11/16	4	1/4	4	17	4	1/4	4	158	38
Sterling 5-Chain	3	1/4	1 1/2	1/4	V	11	1 1/2	19	1 1/2	40 1/2	1 1/2	F	56 1/2	3 1/2	1/4	2	29 11/16	4	1/4	1	158	38
Sterling 7 1/2	3	1/4	1 1/2	1/4	V	11	1 1/2	19	1 1/2	40 1/2	1 1/2	F	56 1/2	3 1/2	1/4	2	29 11/16	4	1/4	1	158	38
Stewart M15–1	3	1/4	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	41 3/8	2	1/4	2	22 3/4	2	1/4	1	99 1/2	32
Stewart M9–1 1/2	3	1/4	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	48 1/2	2	1/4	2	8	5	1/4	2	119 1/4	32
Stewart M7X	3	1/4	.....	1 1/4	.....	.....	.....	.....	.....	.....	.....	.....	50 5/8	2	1/4	2	8	5	1/4	2	132 3/4	32
Stewart M10X	3	1/4	.....	1 1/4	.....	.....	.....	.....	.....	.....	.....	.....	60	3	1/4	2	8	5	1/4	2	138	32
Stoughton C–3/4	3	1/4	1	1 3/16	V	14	2 1/4	14	2 1/4	33	1 1/4	F	56 1/2	2 1/2	1/4	2	55	2 1/4	1/4	2	92 1/2	34
Stoughton A–1	4	1/4	1	1 3/16	V	18	1 1/4	15	1 1/4	39 1/4	1 1/2	F	16 3/4	1 3/4	1/4	4	16 3/4	1 3/4	1/4	4	88	34
Stoughton B–1 1/2	4	1/4	1 1/4	1 3/16	V	18	1 1/4	15	1 1/4	39 3/4	1 1/2	F	19	2	1/4	4	19	2	1/4	4	116	34
Stoughton D–2	4	1/4	1 1/4	1 3/16	V	9	1 1/2	15	1 1/4	40	2	F	23	2 1/4	1/4	4	23	2 1/4	1/4	4	116	34
Stoughton F–3	3	1/4	1 1/4	1 3/16	V	12	2	15	1 1/4	44	2	F	23	2 1/4	1/4	4	23	2 1/4	1/4	4	127	36
Super Truck 50	3	1/4	1 1/4	1 1/16	V	19	1 3/4	19	1 1/2	37 1/2	1 7/16	F	51 1/16	2 1/4	1/4	2	51 1/2	2 1/4	1/4	2	135	34
Super Truck 70	3	1/4	1 1/4	1 1/16	V	19 1/2	1 3/4	19	1 1/2	37 1/2	1 7/16	F	55 1/2	2 1/2	1/4	2	55 1/2	2 1/2	1/4	2	144	34
Super Truck 100	3	1/4	1 1/2	1 1/16	V	6	1 3/4	19	1 3/4	42	1 7/8	F	68	3	1/4	2	51 1/2	3	1/4	2	144	34
Thomart Speed	3	1/4	1 1/4	1 1/16	V	9	1 1/4	7 1/4	1 1/4	36 1/16	2	F	19 3/16	1 3/4	1/4	4	19 3/16	1 3/4	1/4	4	102	34
Tiffin GW–1 1/2	3	1/4	1 1/4	1 1/4	V	.....	.....	.....	.....	.....	.....	.....	46	2	1/4	1	46	2	1/4	1	114	35
Tiffin MW–2 1/2	3	1/4	1 1/4	1 1/4	V	.....	.....	.....	.....	.....	.....	.....	52	2 1/4	1/4	1	52	2 1/4	1/4	1	138 1/2	32 1/4
Tiffin F–35–3 1/2	3	1/4	1 1/4	1 1/4	V	.....	.....	.....	.....	.....	.....	.....	58	2 1/2	1/4	1	58	2 1/2	1/4	1	151	35 1/4
Tiffin TW–5	4	1/4	1 1/2	1 1/2	V	.....	.....	.....	.....	.....	.....	.....	68	3	1/4	1	68	3	1/4	1	156	38 1/2
Tiffin UW–6	4	1/4	1 1/2	1 1/2	V	.....	.....	.....	.....	.....	.....	.....	68	3	1/4	1	68	3	1/4	1	156	38 1/2
Titan 3 1/2	4	1/4	1 1/2	1 1/2	V	.....	.....	.....	.....	.....	.....	.....	60	2 1/4	1/4	2	14	4 1/2	1/4	2	144	34
Titan 5	4	1/4	1 1/2	1 1/4	.....	.....	.....	.....	.....	.....	.....	.....	90	2 1/4	1/4	2	14	4 1/2	1/4	2	144	34
Titan 2 1/2	4	1/4	1 1/2	1 1/4	.....	.....	.....	.....	.....	.....	.....	.....	54	2 1/2	1/4	2	26	4	1/4	1	144	32
Tower J–1 1/2	3	1/4	1 1/4	1 1/4	V	7	1 3/4	11 1/2	1 3/4	33	1 1/4	F	11 1/4	3 1/4	1/4	4	11 1/4	3 1/4	1/4	4	135 1/4	32 1/2

Replacement Table—Continued

Name, Model and Tonnage	ENGINE											BRAKE LINING								FRAME	
	Piston Rings		Carburetor			Upper Hose		Lower Hose		Fan Belt			Service				Emergency				Length	Width
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Tower H–2½	3	⅛	1¼	1¼	V	7	1¾	11½	1⅜	33	1¼	F	13	3½	¼	4	13	3½	¼	4	138¾	32½
Tower G–3½	3	⅛	1½	1½	V	7½	1¾	12	1⅜	36	1½	F	15⅝	3¾	¼	4	15⅝	3¾	¼	4	152	37
Traffic C–4000	3	⅛	1	⅛	H	10½	2	10½	2	41¼	1¼	F	43½	2½	⅛	2	38	1¾	⅛	2	120¾	42
Traffic 6000	3	⅛	1	⅛	H	10½	2	10½	2	41¼	1¼	F	52	3	⅛	2	47	2	⅛	2	120¾	34
Traffic Speedboy	3	⅛	1	⅛	H	10½	2	10½	2	41¼	1¼	F	43½	2½	⅛	2	38	1⅝	⅛	2	86	34
Transport 15–1	3	⅛	1	1	H	10¾	2	13	2	40⅝	1¼	F	48	2½	⅛	2	46½	2¼	⅛	2	98½	34
Transport 25–1½	3	⅛	1¼	1¼	H	12	2	12	2	36½	1	F	48½	2	⅛	2	46½	1½	⅛	2	100½	34
Transport 35–2	3	⅛	1	1	V	10¾	2	13	2	40⅝	1¼	F	11	3	⅛	2	46½	1½	⅛	2	116½	34
Transport 60–3½	4	¼	1½	1¼	V	9¼	2	10	1¼	32⅝	2	F	10¼	3½	⅛	2	48½	2½	⅛	2	123¼	34
Transport 75–5	4	¼	1¼	1¼	V	12	2	16	1¼	35⅞	2	F	11⅞	3	⅛	4	58	2½	⅛	2	150¼	36½
Transport 55–3	3	⅛	1¼	1¼	V	9	1½	16	1¼	31½	1¼	F	10¼	3½	⅛	2	48½	2½	⅛	2	123¼	34
Traylor B	4	¼	1	....	V	.....	.....	.....	.....	38	1	F	50	2	¼	2	50	2	¼	2	117	34
Traylor C	4	¼	1¼	....	V	.....	.....	.....	.....	36	2	F	50	2	¼	2	50	2	¼	2	122	34
Traylor D	4	¼	1¼	....	V	.....	.....	.....	.....	36	2	F	56½	2¼	¼	2	56½	2¼	¼	2	142	34
Traylor F	4	¼	1¼	....	V	.....	.....	.....	.....	37	2	F	59	2½	....	2	59	2½	....	2	165	35
Triangle AA–1	3	⅛	1	1	H	17	2	17	2	34	1	F	22½	1½	⅛	4	48	2½	⅛	2	94	35
Triangle A–1½	3	¼	1	1	V	14	1¼	14½	1¼	39¼	1½	F	7	4	⅛	2	49	2	⅛	2	126	34
Triangle B–2½	3	¼	1¼	1¼	V	9	1½	18	1¼	39¼	1½	F	7	4	⅛	2	52	3	⅛	2	132	34
Triangle C–2	3	¼	1	1	V	14	1¼	14½	1¼	39¼	1½	F	7	4	⅛	2	52	3	⅛	2	129	34
Triumph HB–2½	4	¼	....	....	V	9	1¾	17	1¼	32½	2	F	46	2½	⅛	2	32	2½	⅛	2	120	34½
Triumph HC–2	4	¼	....	....	V	9	1¾	17	1¼	32½	2	F	46	2½	⅛	2	32	2½	⅛	2	120	34½
Ultimate A–2	4	¼	1¼	1⅝	V	11	2	8	1¼	34	2	F	20	2¼	¼	2	45	2	¼	2	126	32¼
Ultimate AJ2	4	¼	1¼	1⅝	V	11	2	8	1¼	34	2	F	20	2¼	¼	2	45	2	¼	2	126	32¼
Ultimate AJL–2	4	¼	1¼	1⅝	V	11	2	8	1¼	34	2	F	20	2¼	¼	2	45	2	¼	2	150	32¼
Ultimate B–3	4	¼	1¼	1⅝	V	11	2	8	1¼	34	2	F	51	2¼	¼	2	51	2¼	¼	2	144	32¼
Ultimate BL3	4	¼	1¼	1⅝	V	11	2	8	1¼	34	2	F	51	2¼	¼	2	51	2¼	¼	2	192	32¼
Ultimate D–5	4	¼	1¼	1⅝	V	11	2	8	1¼	34	2	F	51	2¼	¼	2	51	2¼	¼	2	180	37½
Union FW–2½	3	¼	1¼	1¼	V	20	1¾	19½	1½	37¼	2	F	26	4½	¼	1	52	3	¼	1	133½	32
Union H–4	3	¼	1¼	1¼	V	20	1¾	19½	1½	37¼	2	F	56¾	3½	¼	1	32	4½	⅛	1	157½	34
Union HW–4	3	¼	1¼	1¼	V	20	1¾	19½	1½	37¼	2	F	26	4½	¼	1	24	4	¼	2	157½	34
United 1½	4	¼	1	1⅛	H	15	2½	16	1½	37½	2	F	48	2	⅛	1	48	1½	⅛	1	120	33
United 2½	4	¼	1¼	1⅛	H	7	2½	12	1½	37½	2	F	49	3	⅛	1	49	2½	⅛	1	Opt	33
United 3½	4	¼	1¼	1⅛	H	7	2½	7	1½	37½	2	F	62	3	⅛	1	58	2½	⅛	1	Opt	34
United 5	4	¼	1½	1⅛	H	14½	2½	12	1½	37½	2	F	82½	2¼	⅛	1	88½	2½	⅛	1	Opt	38
U.S.N.–1½	3	M	1	⅛	H	11½	2	9	1¼	37	1¼	F	50½	2½	⅛	2	46½	1½	⅛	2	120	34
U.S.N.W.–1½	3	⅛	1	⅛	H	11½	2	9	1¼	37	1¼	F	19½	2	⅛	4	19½	2	⅛	4	120	34
U.S.R.–2½–3	3	⅛	1¼	⅛	V	10	1¼	10	1¼	35	1¼	F	21	2¼	¼	4	21	2¼	¼	4	144	34
U.S.S.–3½–4	3	¼	1½	¼	V	9	1½	8	1½	37	1¼	F	50	2½	¼	2	50	2½	¼	2	156	36
U.S.T.–5–6	4	¼	1½	¼	V	15	2	13	1½	38¾	2	F	62	3	¼	4	33	4	¼	1	168	36
U.S.U.–1¼	4	⅛	1	⅛	V	11½	1¾	11½	1¼	33	1¼	F	50½	2½	⅛	2	20	1½	⅛	4	108	32
Velie 46–1½	3	M	1	⅛	V	9	2	12	1¼	41⅛	¾	V	54	2½	⅛	2	52⅛	2¼	⅛	2	120	31
Velie 53–2½	3	⅛	1¼	⅛	V	5½	1⅝	12½	1¼	40½	2	V	54	2½	⅛	2	52⅛	2¼	⅛	2	120	31
Vim 50–1½–¾	3	....	1	....	....	.....	.....	.....	.....	33½	....	F	48	.....	.....	2	46⅝	.....	.....	2	.....	.....
Walker M2	...	....	....	....	....	.....	.....	.....	.....	.....	.....	....	43	2¼	⅛	2	14	1¼	⅛	4	90	32
Walker P3½	...	....	....	....	....	.....	.....	.....	.....	.....	.....	....	53¼	3	¼	2	19¼	2½	¼	4	140	35
Walker N5	...	....	....	....	....	.....	.....	.....	.....	.....	.....	....	53½	3	¼	2	19¼	2½	¼	4	162	35
Walker 22	...	....	....	....	....	.....	.....	.....	.....	.....	.....	....	45½	2½	⅛	2	16	2	⅛	4	99	32
Walker 42	...	....	....	....	....	.....	.....	.....	.....	.....	.....	....	53¼	3	¼	2	19¼	2½	¼	4	120	32
Walker Johnson A–2	3	⅛	1	1	V	11½	2	7½	1¼	37	1	F	12	3¼	¼	4	12	3¼	¼	4	117	32
Walker Johnson B3	4	¼	1¼	1¼	V	10	2	8	1¼	33½	1¼	F	13	3½	¼	4	13	3½	¼	4	133	32⅛
Walter S–5	3	¼	⅜	2	V	10	1½	18	1½	39	1½	F	15	5	¼	4	57	2½	¼	2	150	36
Ward LaFrance 2B–2½–3½	3	¼	1¼	1½	V	7	1½	16	1½	41½	1½	F	13	3½	¼	4	13	3½	¼	4	137½	33
Ward LaFrance 4A–3½–5	3	¼	1¾	1¾	V	8½	1½	18	1½	41½	1½	F	15½	3¾	¼	4	15½	3¾	¼	4	170	37
Ward LaFrance 5A–5–7	3	¼	1½	1¾	V	9¼	1½	18	1½	41½	1½	F	18	4	¼	4	18	4	¼	4	170	37
Watson D-1	3	¼	1	1⅛	V	12½	1¾	12	1¼	40	1½	F	10	2½	¼	4	10	2½	¼	4	99	30½
Watson N–3½	3	⅛	1¼	1½	V	16½	1¼	3	1¼	34	1¼	F	62	2½	¼	2	47	2½	¼	2	147	37
Watson U–5	3	⅛	1½	1½	V	16½	1¼	3	1¼	38½	1¼	F	15½	3¼	¼	4	15½	3¼	¼	4	.....	36
White 15–A Taxi	3	¼	1	1	V	7¼	1	6½	1¼	38	1¼	F	46	2½	⅛	2	41	2½	⅛	2	55¾	34
White 15, ¾	3	¼	1	1	V	7¼	1	6½	1¼	38	1¼	F	46	2½	⅛	2	41	2½	⅛	2	76½	34
White 15–45, ¾	3	¼	1	1	V	13½	1½	12	1½	42¼	2	F	53⅞	2½	⅛	2	50⅞	2½	⅛	2	85⅛	34
White 20, 2	3	¼	1	1	V	7¼	1	7¼	1¼	38	1¼	F	55½	3½	¼	2	50⅞	3½	⅛	2	146	34
White 20–D,2	3	¼	1	1	V	7¼	1	7¼	1¼	38	1¼	F	55½	3½	¼	2	50⅞	3½	⅛	2	98	34
White 20–45, 2	3	¼	1	1	V	13½	1½	12	1½	42¼	2	F	11⅝	4	⅛	4	50⅞	3½	⅛	2	107½	34
White 50, Bus	3	¼	1	1	V	13½	1½	12	1½	42¼	2	F	11⅝	4	⅛	4	50⅞	3½	⅛	2	168	70
White 40, 3½–45, 5	3	¼	1	1	V	13½	1½	12	1½	42¾	2	F	11⅝	4	⅛	4	25⅞	5	⅛	4	164	42
White 40–D, 3½–45–D, 5	3	¼	1	1	V	13½	1½	12	1½	42¾	2	F	11⅝	4	⅛	4	25⅞	5	⅛	4	.....	42
Wichita K–1	3	¼	1⅛	1⅛	V	18½	1¼	12	1¼	52¾	1½	F	19½	2	⅛	4	19½	2	⅛	4	127½	30
Wichita M–2	3	¼	1⅛	1⅛	V	18½	1¼	12	1¼	52¾	1½	F	49	2	⅛	2	49	2	⅛	2	126½	30
Wichita RX–3	3	¼	1¼	1¼	V	11	1½	11	1½	43¾	1½	F	54	2¼	⅛	2	54	2¼	⅛	2	130	30
Wichita O–4	3	¼	1½	1½	V	11	1½	11	1½	40	1½	F	56½	2½	⅛	2	56½	2½	⅛	2	152½	36
Wichita S–5	3	¼	1½	1¾	V	11	1½	11	1½	40	1½	F	66	3	¼	2	66	3	¼	2	163½	36
Wilcox AA–1	3	¼	1	....	....	.....	.....	.....	.....	.....	.....	....	47	2½	⅛	2	33¼	2½	⅛	2	96	34
Wilcox B–1½	3	¼	1¼	....	....	.....	.....	.....	.....	.....	.....	....	47	2½	⅛	2	33¼	2½	⅛	2	132	33
Wilcox C–2½	3	¼	1¼	....	....	.....	.....	.....	.....	.....	.....	....	57½	2½	⅛	2	42½	2½	⅛	2	141	33
Wilcox E–3½	3	¼	1¼	....	....	.....	.....	.....	.....	.....	.....	....	57½	2½	⅛	2	42½	2½	⅛	2	156	33
Wilcox F–5	3	¼	1½	....	....	.....	.....	.....	.....	.....	.....	....	69½	3½	¼	2	52	3½	¼	2	148½	36
Wilson 1½	4	¼	....	1	....	.....	.....	.....	.....	.....	1¼	....	39½	1¾	⅛	2	39¼	1¾	⅛	2	120	33
Wilson 2½	4	⅛	....	1¼	....	.....	.....	.....	.....	.....	1¼	....	13¼	3½	⅛	4	13¼	3½	⅛	4	126	33
Wilson 3½	4	⅛	....	1½	....	.....	.....	.....	.....	.....	1½	....	16	3¾	⅛	4	16	3¾	⅛	4	147	38
Wilson 5	4	⅛	....	1½	....	.....	.....	.....	.....	.....	1½	....	18	4	⅛	4	18	4	⅛	4	147	38¼
Winter & Hirsch K–2½	4	¼	1⅝	1½	V	12	1½	14	1½	48	1½	F	13½	3½	¼	4	13½	3½	¼	4	144	32
Winter & Hirsch L–3½	4	¼	1⅝	1½	V	12	1½	14	1½	48	1½	F	16	3¾	¼	4	16	3¾	¼	4	196	36
Winther 751–1	3	¼	1	....	H	15¾	2	17	2	36	1	F	42	2	⅛	2	24	2	⅛	1	102	30
Winther 39–1¼	3	¼	1¼	....	V	10	1¾	4½	1½	33¼	1¼	F	50	2¼	¼	2	22½	2¼	¼	1	120	30
Winther 430–1½	3	¼	1¼	....	V	11¼	1½	11½	1½	30⅝	1½	F	50	2¼	¼	2	22½	2¼	¼	1	120	30
Winther 450 2½	3	¼	1¼	....	V	11½	1½	6½	1½	37½	1¼	F	52	3	¼	2	22½	2¼	¼	2	120	30
Winther 51–2½	3	¼	1¼	....	V	17⅛	1¾	8	1½	42½	2	F	52	3	¼	2	50	2¼	¼	2	144	33
Winther 70–3½	3	¼	1¼	....	V	17⅛	1¾	8	1½	42½	2	F	62	3	¼	2	60	2½	¼	2	156	33
Winther 109–5	3	¼	1½	....	V	21½	1¾	8	1½	42½	2	F	93	2¼	¼	2	93	2¼	¼	2	156	33
Winther 140–7	3	¼	1½	....	V	12	1¾	6	1¾	42¼	2	F	93	2¼	¼	2	93	2¼	¼	2	156	33
Wisconsin 2 (Loganville)	3	⅛	1¼	1¼	H	17	2	17	2	34	¼	F	58	2½	⅛	2	56½	2¼	⅛	2	114	34
Wisconsin 2½ (Loganville)	3	⅛	1¼	1¼	V	12	1½	10	1¼	40	¼	V	58	2½	⅛	2	56½	2¼	⅛	2	120	34
Witt Will N–1½	3	⅛	1¼	1¼	V	8	1½	12	1¼	31	1¼	F	48	3½	¼	4	48	3½	¼	4	Opt	32
Witt Will P–2	3	⅛	1¼	1¼	V	8	1½	12	1¼	41	1½	F	52	3½	⅛	4	52	3½	¼	4	Opt	32
Yellow Cab M22—¾	3	⅛	1	⅛	V	7½	2	9⅝	2	38½	⅝	V	49	2½	⅛	2	45	2½	¼	2	60	43
Yellow Cab M42–1¼	3	⅛	1	⅛	V	7½	2	9⅝	2	38½	⅝	V	11	3	¼	4	11	3	¼	4	92	32

KEY OF ABBREVIATIONS

Note: Numerals on This Page Correspond With Numerals at Head of Specification Columns on Page Following. In All Specifications—O, Own; Op or Opt, Optional

Engine:
Beav—Beaver
Buda
Cont—Continental
GBS—Golden, Belknap & Swartz
Gr-B—Gray-Beal
Her—Hercules
Hin—Hinkley
H-Sp—Herschell-Spillman
1 LeR—Le Roi
Lib—Liberty
LMF—Light Mfg. & Fdy.
Lyco—Lycoming
Mid—Midwest
Sup—Supreme
Wau—Waukesha
Wei—Weidely
Wis—Wisconsin

Valve Arrangement:
H—Overhead
L—ELL-Head
2 S—Sleeve
T—TEE-Head

How Cooled:
A—Air
B—Pump & Thermo
3 C—Centrifugal
G—Gear Pump
T—Thermo-Syphon

Radiator (Make):
BW—B & W
Brm—Brenem
Bus—Bush
Can—Candler
Chic—Chicago
Eag—Eagle
EM—English-Mersick
Eur—Eureka
Fed—Fedders
Flex—Flexo
GO—G. & O.
Har—Harrison
4 Hoo—Hooven
Idl—Ideal
Jam—Jamestown
Kue—Kuenz
Liv—Livingston
Lng—Long
McC—McCord
May—Mayo
Mod—Modine
Per—Perfex
R-T—Rome-Turney
Spar—Sparton
Spec—Special
Spli—Splitex
Stn—Standard
Whe—Wheeler

Radiator (Type):
C—Cellular
Fin—Fin Tube
5 H—Honeycomb
PT—Plain Tube
ZZT—Zig Zag Tube

Lubrication:
FS—Force and Splash
6 F—Force Feed
S—Splash

Carburetor:
Bent—Bennett
Cart—Carter
Eag—Eagle
Ens—Ensign
7 Hol—Holly
John—Johnson
King—Kingston
Mar—Marvel
Mas—Master
Mill—Miller
Rayf—Rayfield
Scoe—Scoe
Strm—Stromberg
Sheb—Schebler
Stew—Stewart
Till—Tillotson
Zen—Zenith

Fuel Feed:
8 G—Gravity
P—Pressure
V—Vacuum

Governor:
Con—Continental
Dup—Duplex
Han—Handy
Her—Hercules
9 Hin—Hinkley
McC—McCanna
Mon—Monarch
Phar—Pharo
Pier—Pierce
Sim—Simplex
Wau—Waukesha

Clutch (Make):
B.B—Borg & Beck
B-Li—Brown-Lipe
Covt—Covert
Det—Detlaff
DG—Detroit Gear & Mach.
10 Dod—Dodge
Full—Fuller
Hart—Hartford
Hoos—Hoosier
HS—Hele-Shaw
M-E—Merchant & Evans
Mun—Muncie
T-D—Twin Disc
W-Gr—Warner Gear

Clutch (Type):
C—Cone
11 D—Disc
DD—Dry Disc
Fr—Friction
WP—Wet Plate

Ignition System:
Amr—American Swiss
Apo—Apollo
AtK—Atwater Kent
AuL—Auto-Lite
Ber—Berling
Bos—Bosch
Con—Connecticut
Del—Delco
Eis—Eisemann
Kin—Kingston
KW—K. W. Ignition Co.
12 Lor—Louraine
NE—North East
POL—Prest-O-Lite
Rm—Remy
RBo—Robert Bosch
Sim—Simms
Spl—Splitdorf
Tea—Teagle
Wag—Wagner
Wes—Westinghouse

Engine Starter:
AC—Allis-Chalmers
AK—Atwater Kent
AL—Auto-Lite
Bj—Bijur
13 Bos—Bosch
DL—Delco
Dy—Dyneto
GD—Gray & Davis
LN—Leece-Neville
NE—North East
Rm—Remy
Sim—Simms
USL—U. S. L.
W—Westinghouse
Wg—Wagner

Gearset:
B-Li—Brown-Lipe
Cott—Cotta
Covt—Covert
Det—Detroit
Dod—Dodge
Dun—Dundore
14 Durs—Durston
Full—Fuller
G-Le—Grant Lees
MM—Mechanics Mach. Co.
Mun—Muncie
W-C—Warner Corporation
W-Gr—Warner Gear

Location of Gearset:
A—Amidships
J—Unit with jackshaft
15 R—Rear
U—Unit with engine

Universal:
Acm—Acme
Arv—Arvac
Bld—Blood-Brothers
Det—Detroit
Hart—Hartford
KB—Kinsler-Bennett
MM—Mechanics
M-E—Merchant & Evans
Nor—Norwalk
16 Pet—Peters
Sned—Snead
Spic—Spicer
Ster—Sterling
Ther—Thermoid
UM—Universal Machine
UP—Universal Products
Var—Varied

Springs:
Am—Am. Auto Parts
Arm—Armstrong
Cham—Champion
Del—Delany
Det—Detroit
GC—Garden City
Har—Harvey
IC—Iron City
Kal—Kalamazoo
Lah—Laher
Lig—Liggett
Mar—Maremont
Math—Mather
17 Mer—Merrill
Nat—National
Pen—Penn
Per—Perfection
P.S.—Point Spring Co.
Row—Rowland
Shel—Sheldon
SP—Spring Perch
Stan—Stan-Par
SS—Standard Steel
Ster—Sterling
Tut—Tuthill
US—United States
Vul—Jenkins Vulcan

Final Drive:
B—Bevel Gear
C—Chain
I—Internal Gear
18 P—Spur
R—Double Reduction
S—Spiral Bevel
W—Worm

Rear Axle (Make):
Col—Columbia
Clark
Dun—Dunkirk
Eat—Eaton
Fli—Flint
Huck—Huck
IrM—Iron Mt.
LM—L M Axle
19 Russ—Russel
Sals—Salisbury
Shel—Sheldon
Stn—Standard Parts
Thom—Thomson
Tim—Timken
Torb—Torbensen
Vul—Vulcan
Walk—Walker
Wis—Wisconsin

Rear Axle (Type):
Flot—Floating
D—Dead
20 ½-Fl—Semi-Floating
¾-Fl—¾-Floating

Steering Gear:
CAS—C. A. S. Products Co.
Dit—Ditwiler
Dod—Dodge
Gem—Gemmer
Jac—Jacox
21 Lav—Lavine
M-P—Muncie Products
Ros—Ross
Sag—Saginaw Products Co.
Woh—Wohlrab

Wheels:
Arc—Archibald
AuW—Auto Wheel
Bim—Bimel
Bud—Budd
Cla—Clark
C&M—Crane & McMahon
Day—Dayton
Det—Detroit
Dis—Disteel
E&O—Eberly & Oris
Hay—Hayes
Hoo—Hoopes Brothers
Imp—Imperial
Ind—Indestructible
Jon—Jones
Kel—Kelsey
22 MM—Michigan Malleable Iron Co.
Mot—Motor Wheel
Mun—Muncie Wheel
Mut—Mutual
Nor—Northern
Pru—Prudden
Roy—Royer
Sch—Schwartz
Smi—Smith
Sta—Stanwell
StM—St. Mary
Stn—Standard
Wal—Walker
Way—Wayne
W-L—Waterhouse & Lester

Rim Equipment:
Bak—Baker
Cle—Cleveland
Det—Detroit
Fir—Firestone
Gdy—Goodyear
23 Hay—Hayes
Jac—Jackson
Jax—Jaxon
Kel—Kelsey
Mil—Miller

Commercial Car Specifications—Corrected Monthly

The Specifications, Chassis Prices, Etc., Are Corrected Each Month From Data Supplied Direct by the Makers. Gasoline Tractor-Trucks Will be Found at the End of Gasoline Commercial Cars

See Also Replacement Table in "Service and Repair Departments." Truck Frame Dimensions Are Included in Replacement Table

(Where prices are not given it is because we have been unable to get them from authoritative sources)

*** An asterisk in front of the model name indicates that corrections have been made somewhere in the specifications since the previous month**

Trade Name and Model	Chassis Price	ENGINE DETAILS: Make and Model Number 4 Cylinder unless otherwise noted	Bore and Stroke	N. A. C. C. Horsepower	Valve Arrange't	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	GEARSET: Make	Location	Speeds	Universal (Make)	Springs (Make)	REAR AXLE: Final Drive	Make	Type	Total Gear Reduction in High	Total Gear Reduction in Low	Steering Gear (Make)	TIRES, WHEELS, RIMS: *Pneumatic †Dual ‡Solid: Front	Rear	Wheels (Make)	Rim Equipment	Chassis Weight (Stripped)	Wheelbase
		1			2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20			21			22	23		
1000 Pounds																																		
Chevrolet	.....	Own	3 11/16x4	21.7	...	...	Har	.....	FS	.....	G	.....	Own	C	Rm	.....	Own	U	3	Own	.....	S	Own	½Fl	3.77	18.9	M-P	30x3½	30x3½	Hay	Jax	1485	103
*Dort	685	Lyco K	3½x5	19.6	L	T	Fed	C	S	Cart	V	.....	Own	C	Con	Bos	Own	U	3	MM	Lig	S	Fli	¾Fl	4.66	15.13	Sag	31x4*	31x4*	Imp	Jac	2015	106
Overland	425	Own	3 3/16x4	18.2	L	T	Own	C	FS	Till	G	.....	B.B.	DD	Con	AuL	Own	U	3	Own	Own	B	Own	½Fl	4.5	17.68	Own	30x3½	30x3½	Hay	.....	1456	100
1500 Pounds																																		
Acason Fast	.....	Own	3¾x5	22.5	L	C	.....	C	F	Sheb	V	.....	Full	D	Eis	W	Full	U	3	Bld	Det	W	Tim	½Fl	6.25	25	Ros	34x5*	34x5*	Bim	.....	3080	142
*Brockway E	.....	Wis SU	4 x5	25.6	H	C	GO	C	F	Zen	V	.....	B-Li	DD	Rm	LN	B-Li	U	3	M-E	Row	S	Col	Flot	5.13	20.5	Gem	33x5*	33x5*	.....	Fir	3450	135
Chevrolet G	650	Own	3 11/16x4	21.7	H	C	B	Har	H	FS	Zen	G	.....	Own	C	Rm	Rm	Own	...	3	Own	SS	S	Own	½Fl	5.42	18.9	M-P	31x4*	34x4½*	Hay	Jax	2167	120
Commerce 9	1150	Cont N	3¾x5	22.5	L	T	Lng	Fin	S	Zen	V	.....	DG	C	Eis	Bj	Det	U	3	Spic	Am	B	Sals	¾Fl	5.73	18.33	Jac	32x4½	32x4½	Bud	.....	3100	127
Corbitt S Speed Truck	1250	H-Sp 7000	3½x5	19.8	L	T	Own	C	FS	Strm	V	.....	B-Li	DD	Eis	Dy	B-Li	U	3	Hart	Shel	W	Shel	½Fl	6	20	Ros	34x4½*	34x4½*	Bim	Fir	3420	130
Dodge Brothers	730	Own	3 7/16x4½	24	L	C	McC	PT	FS	Stew	V	.....	Own	DD	NE	NE	Own	U	3	Own	Own	S	Own	½Fl	4.16	17.4	Own	32x4*	32x4*	Kel	Kel	1992	114
Ogden A2	.....	Cont N	3½x5	19.6	L	T	Chic	Fin	FS	Strm	V	.....	B-Li	DD	Spl	.....	B-Li	U	3	M-E	Tut	W	Tim	½Fl	6.2	.....	Ros	34x5	34x5	Stn	.....	3100	125
Perfection A	1095	Cont N	3½x5	19.6	L	T	Own	C	FS	Zen	V	.....	B.B.	DD	Rm	Rm	Own	U	3	Ther	Own	B	Tim	½Fl	5	22.3	Lav	32x4½	32x4½	Bim	Mil	2500	128
Rainier R21	1970	Cont N	3½x5	19.6	L	T	Har	H	FS	Zen	V	Mon	B-Li	DD	Eis	.....	B-Li	U	3	Hart	Per	W	Tim	½Fl	7.2	23.9	Lav	35x5*	35x5*	.....	Fir	2350	125
Republic Rapid Transit	1250	Lyco KB	3½x5	19.6	L	T	Own	C	FS	Strm	V	.....	Full	DD	AuL	AL	Full	U	3	Spic	Math	I	Torb	D	5.38	15.06	Jac	33x5	33x5	Mot	Fir	2650	124
Samson 15	595	Own	3 11/16x4	21.8	H	C	Own	PT	FS	Zen	G	Mon	Own	D	Rm	AL	Own	A	3	Own	Own	S	Own	½Fl	6.33	21.02	Own	32x4*	32x4*	Own	Opt	2366	118
Service 12	.....	Mid 409	3¾x4½	16.9	H	I	Lng	Fin	F	Strm	G	.....	Hoos	DD	Rm	Rm	Det	U	3	M-E	Shel	B	Tim	½Fl	6.88	22.1	Ros	32x4½*	32x4½*	Bim	Fir	2720	128
Stoughton C	1095	Mid 410	3 7/8x4½	18.2	H	I	.....	Fin	F	Zen	V	.....	Det	DD	Rm	Rm	Own	U	3	Ther	Own	B	Col	Flot	5.87	20	Lav	34x4½*	34x4½*	Roy	Gdy	2480	131
Vim 50	995	Own	4 x5	25.6	L	T	McC	Fin	F	Zen	G	.....	Own	D	Wes	Wes	Own	U	3	MM	Shel	B	Own	.....	4.7	.....	Own	32x4*	32x4*	.....	Fir	2600	108
White 15	2400	Own	3¾x5 1/8	22.5	L	C	.....	C	FS	Own	G	.....	Own	D	...	.....	Own	A	4	Own	.....	B	Own	½Fl	3.99	18.6	Own	34x5*	34x5*	.....	Fir	3225	133
Yellow Cab M-22-¾	1590	Cont V-4	3¾x5	22.5	L	T	Lng	Fin	FS	Zen	G	.....	B-Li	DD	Bos	.....	B-Li	U	3	Spic	Math	B	Tim	.....	4.9	16.31	Gem	33x4½*	33x4½*	Stn	Fir	2400	117
1 Ton																																		
Acason R	.....	WAU BUX	3¾x5¼	22.5	L	...	Can	C	S	Sheb	V	Wau	Full	.....	Eis	.....	Full	U	4	Bld	Det	W	Tim	½Fl	6.2	24.8	Ros	35x5*	35x5*	Bim	.....	3050	129
Acme 20	.....	Cont N	3¾x5	22.5	L	T	GO	C	FS	Rayf	V	Dup	B.B.	DD	Eis	Bos	Cott	U	3	Bld	Det	W	Tim	½Fl	6.75	27	Ros	35x5*	35x5*	Bim	.....	3050	129
Atlas 22	1495	Buda WTU	3¾x5 1/8	22.5	L	C	Own	H	F	Zen	G	.....	M-E	DD	AtK	Bj	Own	U	3	Ster	IC	W	Own	½Fl	5.16	14.46	CAS	34x4½	34x4½	Sch	Fir	2850	130
Avery	.....	Own 6	3 x4	21.6	L	C	Own	C	S	Strm	V	Own	Own	DD	KW	W	Own	U	3	Pet	Math	I	Torb	D	8	26.66	Ros	34x5*	34x5*	StM	Gdy	2800	129
Bell M	1495	Buda	3 5/8x5 1/8	21	L	C	Chic	PT	F	Zen	V	.....	B.B.	DD	Eis	.....	Mun	U	3	Spic	Det	W	Tim	.....	7.2	.....	Lav	35x5	35x5	Bim	Fir	2500	126
Belmont B	1525	Buda MU	3 5/8x5 1/8	21	L	C	R-T	Fin	S	Zen	G	.....	Full	DD	Con	Dy	Full	U	3	ME	Math	W	Sals	¾Fl	5.2	15.75	Lav	35x5	35x5	Smi	Fir	2000	113
*Bessemer G	1450	Cont N	3½x5	19.6	L	T	Stn	C	FS	Strm	G	.....	Full	DD	Bos	Bj	Full	U	3	Bld	Per	I	Torb	D	.....	.....	Ros	35x5	35x5	Sch	Fir	3000	124
*Bethlehem KN	1385	Own	3½x5	19.6	L	T	GO	H	F	Zen	G	.....	B.B.	DD	Bos	GD	Det	U	3	Spic	Math	B	StP	½Fl	6.	18.8	Ros	35x5	35x5	.....	Fir	2800	125
Betz	1850	J-3	3¾x5 1/8	22.3	L	G	Chic	PT	F	Zen	G	Mon	B-Li	D	Bos	Bos	B-Li	U	3	Pet	Mar	W	Tim	½Fl	.....	.....	Ros	34x5	34x5	.....	Fir	3150	140
*Casco Model A	1785	Buda MU	3¾x5 1/8	22.4	L	C	GO	C	F	Zen	V	.....	Full	DD	Bos	Bos	Full	U	3	Spic	Stan	S	Col	½Fl	5.85	23.46	Woh	34x5	34x5	Arc	Fir	3100	130
Chevrolet T	1095	Own	3 11/16x5¼	21.7	H	C	Har	H	FS	Zen	G	Mon	Own	C	Rm	AL	Own	...	3	.....	Arm	W	Own	½Fl	7	24.67	M-P	33x4*	35x5*	Hay	Jax	2840	125
Clydesdale 10	1485	Cont N	3¾x5	22.5	L	T	Own	PT	FS	Zen	V	.....	B.B.	DD	Bos	Bos	B-Li	U	3	Spic	Stan	B	Tim	½Fl	6.1	20.3	Ros	34x5	34x5	.....	Fir	3100	138
Clydesdale 10A	1535	Cont N	3¾x5	22.5	L	T	Own	PT	FS	Zen	V	.....	B.B.	DD	Bos	Bos	B-Li	U	3	Spic	Stan	W	Tim	½Fl	6.75	22.5	Ros	34x5	34x5	.....	Fir	3100	138
*Corbitt E-22	1480	Cont N	3¾x5	22.5	L	T	McC	Fin	FS	Strm	V	.....	B-Li	DD	Eis	.....	B-Li	U	3	Hart	Shel	W	Shel	½Fl	6	20	Ros	34x3½	34x4	Bim	Fir	3730	130
*Day-Elder AS	.....	Cont N	3¾x5	22.5	L	T	Bus	Fin	FS	Zen	G	.....	Covt	DD	Eis	.....	Covt	U	3	Hart	Shel	W	Shel	½Fl	6	21.96	Gem	35x5*	35x5*	Jon	Fir	3000	128
Dearborn E (Speed)	1600	Buda MU	3 5/8x5 1/8	21	L	C	Chic	PT	F	Strm	V	.....	Full	DD	Con	Bos	Full	U	3	Hart	.....	W	Wis	½Fl	6.2	18.6	Ros	35x5*	35x5*	.....	Fir	3280	132
Defiance G	.....	Cont N	3¾x5	22.5	L	T	Per	C	FS	Zen	V	.....	B.B.	DD	Eis	AL	G-Le	U	3	Spic	Det	B	Eat	.....	6.14	.....	Own	35x5*	35x5*	StM	Fir	2700	128
Diehl A	.....	Cont N	3½x5	19.6	L	T	.....	H	FS	Zen	G	.....	B.B.	.....	Sim	.....	Durs	...	3	KB	Mar	I	Torb	D	5.3	.....	Ros	34x4½*	35x5*	Sch	Fir	2400	115
D-Olt A1	1695	H-Sp 7000	3½x5	19.6	L	T	.....	H	FS	Scoe	V	Opt	B-Li	DD	RBo	.....	B-Li	U	3	Spic	SP	W	Tim	½Fl	6.75	22	Ros	35x5	35x5	Day	Fir	3400	148
Dorris K-2	2490	Own	4 x5½	25.6	H	...	Mod	PT	F	Strm	V	.....	Own	DD	Bos	W	W-Gr	U	3	Spic	.....	B	Tim	½Fl	4.23	15.65	Ros	33x5	33x5	Mun	.....	2000	Op
Eugol	1795	Buda WTU	3¾x5 1/8	22.5	L	C	Chic	PT	F	Strm	V	.....	WC	DD	Wes	W	WC	U	3	Pet	Math	W	Tim	½Fl	6.25	30.3	Ros	34x5*	34x5*	Bim	Fir	3500	135
Federal R-2	.....	Cont J-4	3¾x5	22.5	L	C	Own	Fin	F	Zen	V	.....	B.B.	DD	Eis	Rm	Det	U	3	Pet	Det	W	Tim	½Fl	5.6	17.4	Gem	33x5	33x5	.....	.....	2950	132
Federal S-21	.....	Cont J-4	3¾x5	22.5	L	C	Own	Fin	F	Zen	V	Phar	B.B.	DD	Eis	.....	Det	A	3	Spic	Math	W	Tim	½Fl	7.2	20.65	Gem	36x3½	36x5	Det	Det	3900	144
Ford T	380	Own	3¾x4	22.5	L	T	Own	Fin	S	.....	G	.....	Own	.....	Own	.....	Own	U	2	Own	Own	W	Own	½Fl	Opt	19.9	Own	30x3½*	32x4½	.....	.....	1430	124
Fulton A	1495	H-Sp 7000	3½x5	19.6	L	T	Liv	H	FS	Cart	G	.....	B.B.	DD	Ber	W	Durs	U	3	Spic	Row	B	Col	.....	6.8	.....	Lav	35x5	35x5	Hoo	Fir	2800	130
Garford 15	1590	Buda MU	3 5/8x5½	21	L	T	Lng	Fin	F	Strm	G	.....	.....	DD	AtK	AtK	Own	U	3	Spic	Per	W	Tim	½Fl	6.25	.....	Gem	34x5*	34x5	.....	.....	3500	132
Gary F	1775	Buda WU	3¾x5½	22.5	L	C	Chic	Fin	S	Zen	V	Pier	Full	DD	Eis	.....	Full	U	3	Hart	Tut	W	Tim	½Fl	.....	.....	Ros	36x3½	36x4	Pru	.....	3400	130
G.M.C. K-16	.....	Own	3½x5½	19.6	L	B	Own	Fin	F	Mar	G	Own	Own	DD	Eis	Own	Own	U	3	UM	Det	B	Own	¾Fl	6	21.9	Own	34x5*	34x5*	Kel	.....	3250	132
Graham Brothers B	1265	Dodge	3 7/16x4½	24	L	C	McC	PT	FS	Stew	V	.....	Dod	DD	NE	NE	Own	U	3	UP	Det	S	Own	½Fl	6.28	29.29	Dod	33x4½*	34x5*	.....	.....	2550	140
Gramm-Pioneer 10 Speed T	1245	Lyco CT	3¾x5	22.5	L	T	Own	Fin	FS	Strm	G	.....	B.B.	DD	Con	AL	G-Le	U	3	Own	Per	B	Sals	¾Fl	5.75	26	Ros	33x5*	33x5*	Day	Fir	2370	...
Hawkeye	1375	Buda MU	3 5/8x5 1/8	21	L	C	.....	C	F	Zen	G	.....	Full	DD	Eis	.....	Ful	U	3	.....	Det	I	Clark	D	6.25	18	Ros	34x5	34x5	Day	Fir	3250	136
Independent B (Iowa)	1665	Cont N	3½x5	19.6	L	C	GC	PT	FS	Strm	V	.....	Full	DD	Bos	.....	Full	U	3	Bld	GC	....	Russ	D	.....	.....	Lav	34x3	34x4	StM	Fir	3480	135

| | | |

Trade Name and Model	Chassis Price	ENGINE DETAILS: Make and Model Number 4 Cylinder unless otherwise noted	Bore and Stroke	N. A. C. C. Horsepower	Valve Arrange't	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	GEARSET: Make	Location	Speeds	Universal (Make)	Springs (Make)	REAR AXLE: Final Drive	Make	Type	Total Gear Reduction in High	Total Gear Reduction in Low	Steering Gear (Make)	TIRES, WHEELS, RIMS: *Pneumatic †Dual ‡Solid — Front	Rear	Wheels (Make)	Rim Equipment	Chassis Weight (Stripped)	Wheelbase
1½ Ton—Con'd		1			2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20			21			22	23		
Cyclone A	2300	H-Sp 7000	3½x5	19.6	L	T	Lng	Fin	FS	Sheb	G	.....	W-Gr	D	Wes	W	W-Gr	U	3	Nor	Row	I	Torb	D	8.23	26.66	Ros	34x5*	36x6*	Day	Opt	3000	136
*Day-Elder B	.....	Cont N	3¾x5	22.5	L	T	Bus	Fin	FS	Zen	G	.....	Covt	DD	Eis	.....	Covt	U	3	Hart	Shel	W	Shel	½Fl	7.8	32.03	Gem	34x3½	34x5	Jon	Fir	3300	144
Dearborn F	2180	Buda WU	3¾x5⅛	22.5	L	T	Chic	Fin	FS	Strm	V	.....	Full	DD	Bos	.....	Full	U	3	.....	Tut	W	Wis	½Fl	8.5	25.5	Dit	34x4	34x5	.....	.....	3280	126
Dearborn FX	2300	Buda WU	3¾x5⅛	22.5	L	T	Chic	Fin	FS	Strm	V	.....	Full	DD	Bos	.....	Full	U	3	Hart	Tut	W	Wis	½Fl	8.5	25.5	Dit	34x4	34x5	.....	.....	3600	138
Defiance D	.....	Cont N	3¾x5	22.5	L	T	Per	C	F	Zen	V	.....	B.B.	DD	Eis	AL	G-Le	U	3	Spic	Det	I	Torb	D	8.1	21	Own	35x5*	36x6*	StM	Fir	3200	140
Diamond T-Farm Spec	2525	Hin	3¾x5¼	22.5	L	C	GO	Fin	F	Strm	V	Own	Covt	DD	Bos	.....	Covt	U	3	Spic	Math	W	Own	½Fl	8.2	29.9	Gem	36x3½	36x5	.....	.....	5100	144
Diehl B	.....	H-Sp 7000	3½x5	19.6	L	T	.....	H	FS	Zen	G	.....	M-E	.....	Bos	.....	Durs	.....	3	M-E	Row	I	Torb	D	5.3	.....	Ros	.....	.....	Way	.....	2500	120
D-Olt A	2450	H-Sp 7000	3½x5	19.6	L	T	GO	PT	S	Zen	V	Dup	B-Li	DD	RBo	.....	B-Li	U	4	Spic	SP	W	Tim	½Fl	7.75	37.2	Ros	34x4	34x5	.....	.....	4500	168
Douglas G	1750	Buda WU	3¾x5⅛	22.5	L	S	Own	PT	P	Sheb	V	.....	Full	DD	Eis	.....	Full	U	3	.....	Own	I	Torb	D	8	23.1	Ros	34x3½	34x5	Own	Fir	3725	129
Douglas GW	1750	Wei	3¾x5½	22.5	H	S	Own	PT	F	Sheb	V	.....	B.B.	DD	Eis	.....	G-Le	U	3	.....	Own	I	Torb	D	8	23 1	Ros	34x3½	34x5	Own	Fir	3725	126
Federal S-22	.....	Cont J-4	3¾x5	22.5	L	C	Own	Fin	F	Zen	V	.....	B.B.	DD	Eis	.....	Det	A	3	Pet	Math	W	Tim	½Fl	7.2	20.65	Gem	34x5*	36x6*	Sch	Det	3900	144
Forschler C	.....	Cont N	3½x5	19.6	L	C	Own	.....	FS	Zen	V	Dup	Full	.....	Bos	Opt	Full	...	3	Hart	Own	W	Shel	.....	.....	.....	Ros	36x3½	36x5	Smi	.....	3670	120
Front Drive C	2800	Buda CTU	3¾x5¼	22.5	L	G	EM	PT	S	Zen	G	Pier	B.B.	DD	Spl	Opt	Own	A	3	Own	Own	W	Own	½Fl	8	32	Lav	34x5	34x5	Stn	.....	3200	Op
Garford 25 B	2190	Buda WU	3¾x5⅛	22.5	L	S	Own	Fin	S	Strm	V	.....	.....	DD	Spl	.....	Own	A	3	Spic	Per	W	Tim	½Fl	7.75	.....	Ros	36x3½	36x5	.....	.....	4000	135
Gersix M	3100	Buda ITU	4 x5½	25.6	L	C	Idl	C	F	Strm	V	Mon	B.B.	.....	Bos	.....	Cott	U	3	Bld	Tut	W	Shel	.....	7.7	31	Ros	36x3½	36x6	Jon	.....	4620	142
*Graham Bros	1325	Dodge	3⅞x4½	24.1	L	C	McC	PT	FS	Stew	V	.....	Dod	DD	NE	NE	Own	U	3	UP	Det	S	Own	½Fl	6.28	29.29	Dod	33x4½*	36x6	.....	.....	2625	140
*Gramm-Pioneer 15	1750	Cont N	3¾x5	22.5	L	T	Own	Fin	FS	Strm	G	.....	Full	DD	NE	NE	Full	U	3	Own	Per	I	Clark	D	7.6	30.4	Ros	36x3½	36x5	Bim	Fir	3660	...
*Gramm-Pioneer 65	2250	Cont N	3¾x5	22.5	L	T	Own	Fin	FS	Strm	G	.....	Full	DD	NE	NE	Own	A	3	Own	Per	W	Eat	½Fl	7.8	28	Ros	36x3½	36x5	Bim	Fir	3860	...
*G. W. W. Farm Spec	1585	Wei	3¾x5½	22.5	H	C	Chic	.....	F	Sheb	G	.....	Full	.....	Del	Del	Full	U	3	Acm	GC	I	Clark	D	7	.....	Woh	35x5	35x5	Roy	Fir	3200	142
*Hug	1350	Buda WTU	3¾x5⅛	22.5	L	C	Per	C	F	Zen	G	.....	Full	DD	Bos	.....	Full	U	3	Bld	Tut	B	Clark	½Fl	5.5	26.62	Ros	34x5	34x5	Stn	Fir	2900	118
Hurlburt ST	1850	Buda	3¾x5	22.5	L	C	Own	Fin	FS	Zen	G	.....	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Per	W	Own	....	6.1	.....	Ros	34x5*	34x5*	.....	.....	3250	130
Independent G (Iowa)	2040	Cont J	3¾x5	22.5	L	C	GO	PT	FS	Strm	V	.....	Full	DD	Bos	.....	Full	U	3	Bld	GC	I	Russ	D	8.2	.....	Lav	34x3½	34x5	StM	Fir	3875	142
Indiana 12	.....	Wau BUX	3¾x5¼	22.5	L	C	McC	Fin	F	Strm	G	.....	B.B.	DD	Eis	.....	B-Li	A	3	Spic	Shel	W	Shel	½Fl	7.8	31.2	Woh	34x3½	34x5	Bim	.....	4100	146
*International 31	1650	Own	3½x5¼	19.6	L	C	Own	Fin	FS	Ens	G	Own	Own	DD	Bos	Own	Own	A	3	Own	.....	I	Own	D	8	26.5	Own	.....	.....	Own	.....	3200	128
Kalamazoo GI	1800	Cont N	3¾x5	22.5	L	T	GO	C	FS	Strm	V	Pier	Full	D	Eis	Dy	Full	A	4	Bld	Shel	W	Wis	½Fl	8.5	40.8	Ros	34x4	34x5	Bim	.....	4450	144
*Kalamazoo LG	2645	Her O	4 x5	25.6	H	C	GO	PT	F	Strm	V	Pier	Full	DD	Sim	Sim	Full	A	4	Bld	Shel	W	Shel	½Fl	8.6	40.8	Ros	36x4	36x7	Smi	.....	5080	144
Kearns N	1650	H-Sp 7000	3½x5	19.6	L	T	Own	H	FS	Zen	V	.....	Full	DD	Bos	Dy	Full	U	3	M-E	Shel	I	Torb	.....	7.6	30	Lav	34x4	34x6	.....	Fir	3000	136
Kelly-Springfield K34	2700	Own	3¾x5¼	22.5	L	C	Lng	Fin	F	Zen	G	Pier	B.B.	D	Eis	DL	Covt	A	3	Pet	Per	W	Own	½Fl	8.5	31.2	Gem	36x3½	36x6	StM	.....	4670	Op
Kissel General Utility	1975	Own 40000	3⅞x5½	24.1	L	C	McC	PT	S	Strm	V	Pier	W-Gr	DD	Eis	.....	W-Gr	U	4	Spic	Math	W	Shel	½Fl	7.8	28.5	Jac	36x3½	36x5	Pru	.....	4100	152
Kleiber A	.....	Cont K-4	4⅛x5¼	27.2	L	C	Per	C	FS	Strm	G	Sim	.....	DD	Bos	.....	B-Li	A	4	Spic	.....	W	Tim	½Fl	7.1	37.51	Ros	36x3½	36x6	Smi	.....	5200	143
Koehler D	2150	H-Sp	3½x5	19.6	L	T	Own	PT	F	Zen	G	Sim	B-Li	D	Spl	.....	.....	U	3	.....	Math	W	Dun	½Fl	7.25	.....	Lav	34x3½	34x5	Way	.....	3600	137
*Larrabee J4	2400	Cont J-4	3¾x5	22.5	L	C	R-T	PT	F	Zen	G	Phar	B-Li	DD	Bos	.....	B-Li	U	3	Spic	Shel	W	Shel	½Fl	7.66	31.4	Gem	34x3½	34x5	Hoo	.....	4500	138
Luedinghaus W	2490	Wau BUX	3¾x5¼	22.5	L	G	Own	PT	FS	Sheb	G	Wau	B.B.	D	Spl	.....	Det	U	3	Spic	Tut	W	Wis	½Fl	8.6	26.6	Lav	34x3½	34x5	StM	.....	4100	144
Maccar L2	.....	Cont K-4	4⅛x5¼	27.2	L	C	Own	Fin	F	Strm	V	Pier	B-Li	DD	Eis	Bos	B-Li	U	4	Spic	Mer	W	Tim	½Fl	8.75	46.81	Ros	36x4	36x6	Day	Fir	4900	150
Mack AB	3000	Own AB	4 x5	25.6	L	C	Own	C	S	Zen	G	Own	Own	DD	Spl	.....	Own	U	4	Spic	Mer	C	Own	D	6.99	37.84	Own	36x4	36x3½†	.....	.....	4900	Op
Mack AB	3450	Own AB	4 x5	25.6	L	C	Own	C	S	Zen	G	Own	Own	DD	Spl	.....	Own	U	4	Spic	Mer	R	Own	Flot	7.6	36.80	Own	36x4	36x3½†	.....	.....	5300	Op
Master JW	2290	Buda OU	4⅛x5½	27.2	L	C	Chic	PT	S	Mas	V	McC	Full	DD	Eis	.....	Full	U	3	Spic	Det	W	Tim	½Fl	Opt	Opt	Ros	34x3½	34x6	Pru	.....	3900	142
Master JWL	2365	Buda OU	4⅛x5½	27.2	L	C	Chic	PT	S	Mas	V	McC	Full	DD	Eis	.....	Full	U	3	Spic	Det	W	Tim	½Fl	Opt	Opt	Ros	34x3½	34x6	Pru	.....	3900	160
Master JD	2590	Buda OU	4⅛x5½	27.2	L	C	Chic	PT	S	Mas	V	McC	Full	DD	Eis	.....	Full	U	3	Spic	Det	W	Walk	Flot	Opt	Opt	Ros	34x3½	34x6	Wal	.....	3900	142
*Master JDL	2665	Buda OU	4⅛x5½	27.2	L	C	Chic	PT	S	Mas	V	McC	Full	DD	Eis	.....	Full	U	3	Spic	Det	W	Walk	Flot	Opt	Opt	Ros	34x3½	34x6	Wal	.....	3900	160
Maxwell	.....	Own	3⅝x4½	21	L	C	Own	PT	FS	Eag	G	.....	Own	C	AtK	.....	Own	U	3	Own	.....	W	Own	½Fl	7.25	34.4	Own	35x5	35x5	Kel	Fir	2385	124
Menominee H	2475	Wis EAU	4 x5	25.6	L	C	Own	Fin	FS	Strm	G	Mon	Det	DD	Eis	Opt	Cott	U	3	Spic	Tut	W	Wis	½Fl	8.25	30.36	Ros	36x3½	36x5	Stn	Fir	4220	144
Moreland BX	1980	Her O	4 x5	25.6	L	C	Own	C	F	Zen	G	.....	B-Li	DD	AuL	AL	B-Li	U	3	Pet	US	W	Tim	½Fl	7	28	Ros	36x3½	36x6	Smi	.....	4125	132
Napoleon 11	1860	Gr-B	3½x5	19.6	H	C	Own	PT	F	Scoe	G	.....	Full	D	Bos	Bos	Full	U	3	Bld	Math	I	.....	D	8	24	Lav	35x5*	36x6*	Roy	Fir	3450	133
Nelson-LeMoon G–2	.....	Cont K-4	4⅛x5¼	27.2	L	C	Chic	Fin	F	Strm	G	Phar	B-Li	DD	Bos	W	B-Li	U	3	Own	Tut	B	Tim	½Fl	7	.....	Ros	36x3½	36x6	Pru	Gdy	3400	Op
Ogden D	.....	Cont N	3¾x5	22.5	L	T	Chic	Fin	FS	Strm	G	Pier	B-Li	DD	Spl	.....	B-Li	U	3	M-E	Tut	W	Tim	½Fl	8.75	.....	Ros	36x3½	36x5	Stn	.....	3400	136
O. K	2000	Buda ITU	4 x5½	25.6	L	G	R-T	PT	FS	Zen	V	Pier	Full	DD	Eis	.....	Full	U	3	Hart	Cham	W	Wis	½Fl	8.25	27.9	Ros	36x3½	36x5	Bim	.....	4310	146
Paige 52-19	1950	Hin 400	4 x5¼	25.6	L	C	Own	Fin	F	Strm	V	Hin	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Per	W	Tim	½Fl	7.7	37.51	Ros	34x5*	38x7*	Own	Fir	4000	140
Parker E23	1995	Wis SU	4 x5	25.6	L	C	Own	PT	F	Strm	V	.....	B-Li	DD	Wes	W	B-Li	U	4	Bld	Tut	W	Tim	½Fl	7.1	28.7	Lav	34x2½	34x6	Bim	.....	3700	140
*Power F	3250	Hin HA 400	4 x5¼	25.6	L	C	GO	PT	F	Zen	G	Hin	Full	DD	Eis	W	Full	U	4	.....	Row	W	Vul	F	7.75	37.2	Ros	36x5	36x7	StM	Fir	5300	150
Premocar	2350	Lyco K	3½x5	19.6	L	T	.....	C	S	Zen	V	.....	B.B.	.....	Del	Dy	G-Le	U	3	Spic	Shel	W	Tim	½Fl	7.	.....	Dit	36x6	36x6	.....	Fir	4200	130
Rainier R26	2490	Cont J-4	3¾x5	22.5	L	C	EM	Fin	FS	Zen	V	Pier	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Per	W	Tim	.....	7.8	.....	Ros	34x3½	34x5	.....	Fir	3600	147
Reliance 10A	2400	Buda ITU	4 x5½	25.6	L	C	Bus	PT	FS	Strm	G	Pier	Full	DD	Eis	.....	Full	U	3	Pet	Shel	P	Tim	½Fl	.....	.....	Ros	36x3½	36x5	Bim	Gdy	4500	150
Republic 11X	1795	Cont N	3¾x5	22.5	L	C	Own	C	FS	Strm	G	.....	Full	DD	Bos	.....	Full	U	3	Spic	Math	I	Torb	D	8	18.84	Jac	34x3½	34x6	Nor	Fir	3656	144
Rowe CW	3000	Wis CAU	3¾x5	22.5	L	C	Fed	H	F	Zen	G	Sim	B-Li	DD	Bos	.....	B-Li	U	4	Spic	Shel	W	Shel	½Fl	6.5	26	Ros	36x6*	36x6*	Hoo	.....	3800	133
Rumely A	1990	Buda CTU	3¾x5¼	22.5	L	C	Mod	ZZT	F	Strm	G	Pier	Full	DD	Spl	.....	Full	U	3	Bld	Math	W	Shel	½Fl	7.8	31.2	Gem	36x3½	36x5	Mot	Gdy	4100	144
Sandow	1895	.....	3¾x5	22.5	L	C	Chic	PT	FS	Strm	V	.....	Full	.....	Eis	.....	Full	U	3	Spic	.....	W	Shel	.....	.....	.....	Ros	.....	.....	Opt	Fir	3495	138
*Sanford W-15	.....	Cont N	3¾x5	22.5	L	C	R-T	C	S	Strm	V	.....	B-Li	DD	Con	Dy	B-Li	U	3	Spic	Shel	W	Shel	½Fl	6.5	26.67	Ros	36x6	36x6	.....	Fir	3800	140
Selden Unit 30	2250	Cont N	3¾x5	22.5	L	T	Lng	Fin	FS	Strm	G	Pier	B-Li	D	Eis	.....	B-Li	U	3	Spic	Per	W	Tim	½Fl	7	23.31	Lav	34x3½	34x5	Arc	.....	3560	137
*Service 21	.....	Buda RU	3½x5½	19.6	L	T	Lng	Fin	FS	Strm	V	.....	Full	DD	Eis	.....	Full	U	3	M-E	Shel	W	Tim	½Fl	7.75	23.25	Ros	34x3½	34x5	Bim	.....	3450	137
*Signal H	.....	Cont C-4	4⅛x5¼	27.2	L	C	R-T	Fin	FS	Strm	G	Sim	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Shel	W	Tim	½Fl	7.75	31	Ros	34x4	36x6	StM	.....	4760	146
*Standard 1½K	1695	Cont N	3¾x5	22.5	L	C	Lng	Fin	F	Strm	V	.....	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Am	W	Tim	½Fl	7.2	31.3	Ros	34x3½	34x5	.....	.....	3466	134
Sterling	2885	Wau	4 x5¾	25.6	L	C	Own	PT	F	Zen	V	Wau	B-Li	DD	Eis	.....	B-Li	U	4	Spic	Math	W	Tim	½Fl	7	37.45	Ros	36x3½	36x5	Pru	.....	4750	142
*Stewart 9	.....	Cont N	3¾x5	22.5	L	T	Bus	PT	FS	Zen	G	.....	Full	DD	Eis	.....	Full	U	3	Hart	Det	I	Clark	D	7.6	22.8	Gem	34x3½†	34x6‡	Way	Fir	3440	140.
Stoughton B	2150	Wau BUX	3¾x5¼	22.5	L	C	Own	Fin	FS	Strm	G	Wau	B-Li	DD	Eis	.....	B-Li	U	3	Ther	Own	W	Shel	½Fl	7.8	32	Lav	36x3½	36x5	Roy	Gdy	3800	140
Tiffin GW	2100	Cont C-4	4⅛x5¼	27.2	L	C	Own	Fin	FS	Sheb	G	Pier	Full	DD	Bos	W	Full	U	3	Pet	Vul	W	Shel	½Fl	7.7	23.25	Ros	36x3½	36x5	Smi	.....	3750	135
Tower J	2175	Cont C-4	4⅛x5¼	27.2	L	C	Own	PT	S	Zen	G	.....	Full	DD	Eis	.....	Full	U	3	Bld	Det	W	Tim	½Fl	7.25	29	Ros	35x5*	38x7*	Pru	Fir	4520	142
*Traffic-Speedboy	1595	Cont N-4	3¾x5	22.5	L	T	Own	C	FS	Cart	G	.....	Covt	DD	Bos	GD	Covt	U	3	Ther	Det	I	Russ	D	6.15	22.5	Own	35x5*	35x5*	Day	Fir	3400	128
*Transport 25	.....	Buda WU	3¾x5⅛	22.5	L	T	Mod	C	F	Strm	V	.....	Full	DD	Eis	Opt	Full	U	3	Sned	Det	I	Clark	Flot	7.25	21.75	Jac	34x3½	34x5	Mot	.....	3700	130
*Traylor B	1390	Buda WU	3¾x5⅛	22.5	L	C	GO	Fin	F	Zen	G	Sim	Covt	DD	Spl	.....	Covt	U	3	M-E	Mer	W	Shel	½Fl	.8	.....	Ros	34x3½	34x6	Sch	.....	4000	140
Triangle A	1985	Wau BUX	3¾x5¼	22.5	L	C	Per	ZZT	FS	Strm	G	Wau	Full	DD	Eis	.....	Full	U	4	UP	Det	I	Clark	D	7.25	29	Gem	34x3½	34x6	Roy	Fir	3750	144
Triumph	1950	Buda MU	3⅝x5½	21	L	C	Mod	PT	F	King	V	Pier	B.B.	D	Spl	.....	Cott	U	4	UP	Tut	W	Wis	½Fl	7.25	.....	Lav	36x3½	36x5	Stn	.....	.....	132
Ultimate A	3150	Buda ITU	4 x5½	25.6	L	C	Own	PT	F	Strm	G	Pier	B-Li	DD	Eis	Bos	B-Li	U	4	Spic	Shel	W	Shel	½Fl	6.5	37.4	Ros	36x3½	36x6	Jon	Fir	4500	140

| | | |

Trade Name and Model	Chassis Price	ENGINE DETAILS: Make and Model Number 4 Cylinder unless otherwise noted	Bore and Stroke	N. A. C. C. Horsepower	Valve Arrange't	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	GEARSET: Make	Location	Speeds	Universal (Make)	Springs (Make)	REAR AXLE: Final Drive	Make	Type	Total Gear Reduction in High	Total Gear Reduction in Low	Steering Gear (Make)	TIRES, WHEELS, RIMS: *Pneumatic †Dual ‡Solid — Front	Rear	Wheels (Make)	Rim Equipment	Chassis Weight (Stripped)	Wheelbase
		1		2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20			21			22	23		
2 Ton—Con'd																																	
Superior E.	2450	Cont C-2	4 1/8x5 1/4	27.2	L	A	Idl	C	F	Strm	V	Pier	Full	DD	Eis	.....	Full	U	3	.....	Tut	I	Torb	D	9	23.2	Ros	36x4	36x6	Sch	Fir	3600	144
Traffic 4000C	1595	Cont N-4	3 3/4 x5	22.5	L	T	Own	C	FS	Cart	G	.....	Covt	DD	Bos	.....	Covt	U	3	Ther	Det	I	Russ	D	7	25.62	Own	34x3 1/2	34x5	Opt	Fir	3175	132
Transport 35	.....	Cont N	3 3/4 x5	22.5	L	T	Mod	C	FS	Strm	G	Dup	Full	DD	Eis	Opt	Full	U	4	Hart	Det	I	Clark	Flot	7.6	36.48	Jac	36x3 1/2	36x6	Mot	.....	4000	140
*Traylor C	2850	Buda ITU	4 x5 1/2	25.6	L	C	GO	Fin	F	Zen	G	Pier	Covt	DD	Spl	.....	Covt	U	3	M-E	Mer	W	Shel	1/2 Fl	7.75	.....	Ros	36x4	36x7	Sch	.....	5100	146
Triangle C	2285	Wau BUX	3 3/4 x5 1/4	22.5	L	C	Per	ZZT	FS	Strm	G	Wau	Full	DD	Eis	.....	Full	U	3	UP	Det	I	Clark	D	9.1	36	Gem	36x4	36x7	Roy	Fir	4200	147
Triumph 2	2550	Buda CTU	3 3/4 x5 1/4	22.5	L	C	Mod	PT	F	King	V	Pier	B.B.	D	Spl	.....	Cott	U	4	UP	Tut	W	Wis	1/2 Fl	7.75	40.3	Lav	36x4	36x7	Stn	.....	5000	144
Twin City	2400	Buda ITU	4 x5 1/2	25.6	L	C	Spli	H	F	Sheb	V	Sim	Full	D	Bos	.....	Full	U	4	.....	Math	I	Clark	D	8	32	Ros	36x6	40x8	Bim	Fir	4800	150
Ultimate AJ	3200	Buda HTU	4 1/4 x5 1/2	28.9	L	C	Own	PT	F	Strm	G	Pier	B-Li	DD	Eis	Bos	B-Li	U	4	Spic	Shel	W	Shel	1/2 Fl	6.5	34.7	Ros	35x5*	38x7*	Jon	Fir	4500	140
Ultimate AJL	3250	Buda HTU	4 1/4 x5 1/2	28.9	L	C	Own	PT	F	Strm	G	Pier	B-Li	DD	Eis	Bos	B-Li	U	4	Spic	Shel	W	Shel	1/2 Fl	6.5	34.7	Ros	35x5*	38x7*	Jon	Fir	4590	156
Walker-Johnson A	2500	Buda WU	3 3/4 x5 1/2	22.5	L	T	Bus	Fin	F	Zen	V	.....	Full	DD	Eis	.....	Full	U	3	Spic	SP	W	Tim	1/2 Fl	7.75	.....	Ros	34x3 1/2	34x6	Jon	.....	4150	140
Walter N	3500	Own FU	4 x5 3/4	25.6	L	C	Bus	PT	F	Strm	G	.....	B-Li	D	Eis	W	B-Li	A	4	Own	.....	.....	Own	Flot	7.25	39	Gem	36x4	36x7	.....	.....	5500	144
White 20	3250	Own	3 3/4 x5 1/8	22.5	L	C	.....	C	FS	Own	G	.....	Own	D	.....	.....	Own	A	4	Own	.....	R	Own	1/2 Fl	6.89	32.1	Own	36x4	36x7	.....	.....	4815	168
Wichita M	2400	Wau BX	3 3/4 x5 1/4	22.5	L	G	.....	PT	F	Strm	G	Wau	Own	C	Wag	.....	B-Li	A	4	Own	Det	W	Shel	1/2 Fl	8.6	45.03	Ros	36x3 1/2	36x6	Bim	Fir	4400	144
Wisconsin (Loganville)	1450	H-Sp. 7000	3 1/2 x5	19.6	L	T	.....	.....	FS	Strm	V	.....	B.B.	WP	Bos	Dy	Det	U	3	UP	Har	I	Torb	D	8	.....	Lav	34x5*	36x6	.....	.....	3200	136
Witt Will P	2900	Cont C-4	4 1/8x5 1/4	27.2	H	G	Mod	Opt	FS	Zen	G	Pier	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Del	W	Tim	Flot	7.75	.....	Ros	36x4	36x8	Arc	Fir	5000	144
2½ Ton																																	
Acason H	.....	Wau CU	4 3/8x5 3/4	30.6	L	...	Can	C	FS	Sheb	V	Wau	Det	.....	Eis	.....	Full	A	4	Bld	Det	W	Tim	Flot	7.75	40.3	Ros	36x4	36x8	Sch	Opt	5400	150
Acme 60	.....	Cont K-4	4 1/8x5 1/4	27.2	L	C	GO	Fin	F	Rayf	V	Dup	B.B.	DD	Eis	DL	Cott	U	4	Bld	Det	W	Tim	Flot	9.25	48.10	Ros	36x4	36x7	Bim	.....	4830	152
American	3350	Wis	4 x6	25.6	L	G	GO	Fin	F	Strm	G	Pier	Det	D	Apo	.....	Cott	U	4	Acm	SP	W	Thom	Flot	8.33	.....	Ros	36x4	36x4†	.....	.....	5000	158
Armleder HWB	3150	Buda HTU	4 1/4 x5 1/2	28.9	L	C	Lng	Fin	F	Zen	G	Phar	B-Li	DD	Bos	W	B-Li	U	4	Spic	Math	W	Tim	Flot	9.25	49.5	Ros	36x4	36x7	StM	.....	5000	148
Armleder HWC	3150	Cont C-4	4 1/8x5 1/4	27.2	L	C	Lng	Fin	S	Zen	G	Phar	B-Li	DD	Bos	W	B-Li	U	4	Spic	Math	W	Tim	Flot	9.25	49.5	Ros	36x4	36x7	StM	.....	5000	148
Atco A	.....	Buda	4 1/4 x5 1/2	28.9	L	C	Chic	PT	F	Strm	G	Pier	Full	D	Eis	.....	Full	A	4	Hart	Shel	W	Wi	.....	8.7	41.6	Ros	36x4	36x7	Smi	.....	4900	150
Atterbury 22C Std	3375	Cont K-4	4 1/8x5 1/4	27.2	L	C	Own	Fin	F	Zen	V	Pier	B-Li	DD	Eis	.....	B-Li	A	4	Spic	SP	W	Tim	Flot	9.25	49.48	Gem	36x4	36x4†	Arc	Fir	5670	156
Atterbury 22C LWB	3475	Cont K-4	4 1/8x5 1/4	27.2	L	C	Own	Fin	F	Zen	V	Pier	B-Li	DD	Eis	.....	B-Li	A	4	Spic	SP	W	Tim	Flot	9.25	49.48	Gem	36x4	36x4†	Arc	Fir	5670	180
*Available H	3160	Her CU-3	4 x5 1/8	25.6	L	C	Chic	Fin	FS	Strm	V	Pier	B-Li	DD	Bos	.....	B-Li	A	4	M-E	Tut	W	Tim	Flot	8.5	40.3	Ros	36x4	36x8	Sch	.....	4750	152
Bell O	2550	Buda	4 1/4 x5 1/2	28.9	L	C	Chic	PT	F	Strm	V	Dup	B.B.	DD	Eis	.....	Det	U	3	UP	Det	I	Russ	D	8	38.4	Gem	34x4	34x7	Bim	Fir	4200	146
*Bessemer J2	2895	Cont C-2	4 1/8x5 1/4	27.2	L	C	Stn	C	FS	Strm	G	Pier	B.B.	DD	Bos	.....	B-Li	A	4	Bld	Per	R	LM	1/2 Fl	.....	.....	Ros	36x4	36x4†	Sch	Fir	4800	158
Betz	2985	D-3	4 1/4 x5 1/2	29	L	P	Chic	PT	F	Zen	G	Mon	B-Li	D	Bos	.....	B-Li	U	4	Pet	Mar	W	Tim	Flot	.....	.....	Ros	36x4	36x8	Stn	.....	5250	160
Brigdeport B	2990	Buda HTU	4 1/4 x5 1/2	28.9	L	G	Own	Fin	FS	Strm	G	Pier	B.B.	D	Eis	.....	B-Li	U	4	Hart	Per	W	Tim	Flot	8.25	.....	Ros	36x4	36x4†	Jon	Fir	5500	156
Brinton D	2975	Cont C-4	4 1/8x5 1/4	27.2	L	C	Chic	PT	F	Strm	G	Pier	B-Li	D	Bos	.....	B-Li	U	3	Spic	Tut	W	Tim	Flot	.....	33.6	Ros	36x4	36x8	Smi	.....	4900	150
Brockway K	.....	Cont K-4	4 1/8x5 1/4	27.2	L	C	Bus	Fin	F	Strm	V	Phar	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Mer	W	Tim	Flot	7.75	41.5	Gem	36x4	36x8	Hoo	.....	5260	153
Brown—Model B	.....	Buda ETU	4 1/4 x5 1/2	28.9	L	C	.....	.....	F	Strm	V	Dup	B.B.	D	.....	.....	Cott	U	4	Spic	Math	R	Wis	.....	8.32	43.3	Ros	36x6	40x8	.....	Fir	4600	145
*Chicago C	.....	Her O	4 x5	25.6	L	C	Brm	PT	F	Strm	G	Sim	B-Li	D	Bos	.....	B-Li	U	4	Pet	Math	R	Huck	Flot	7.36	34	Gem	36x4	36x7†	Opt	Stn	5200	156
*Clydesdale 8	2650	Cont K4	4 1/8x5 1/4	22.5	L	C	Own	PT	F	Zen	V	Own	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Stan	W	Tim	Flot	7	37.4	Ros	36x4	36x7	.....	.....	4900	156
Commerce 25B	2770	Cont K-4	4 1/8x5 1/4	27.2	L	G	Lng	Fin	F	Zen	V	.....	B-Li	DD	Eis	Bj	B-Li	A	4	Spic	Am	W	Tim	Flot	7.75	41.46	Ros	36x6	40x8	Bim	Fir	5200	156
Concord B	3600	Buda HTU	4 1/4 x5 1/2	28.9	L	C	Bus	PT	F	Zen	G	Mon	B-Li	DD	Eis	.....	B-Li	U	4	Spic	Per	W	Tim	Flot	9.25	37	Ros	36x4	36x8	Arc	Fir	5450	150
*Corbitt B-22	3000	Cont K-4	4 1/8x5 1/4	27.2	L	C	McC	Fin	FS	Strm	V	Sim	B-Li	DD	Eis	.....	B-Li	U	4	Hart	Shel	W	Shel	1/2 Fl	8.75	35	Ros	36x4	36x7	Bim	Fir	5325	152
*Day Elder C	3650	Buda HTU	4 1/4 x5 1/2	28.9	L	C	Bus	Fin	F	Zen	G	Mon	Covt	DD	Eis	.....	Covt	U	4	Hart	Shel	W	Shel	1/2 Fl	8.75	41.56	Gem	36x4	36x7	Jon	Fir	4600	150
Dependable D	2650	Buda ITU	4 x5 1/2	25.6	L	C	Lng	Fin	F	Zen	V	Mon	Full	DD	Spl	AL	Full	U	3	Acm	Per	W	Wis	1/2 Fl	8.5	35.75	Ros	36x4	36x7	Bim	Fir	5300	144
Diamond T-U	2650	Hin	4 x5 1/4	25.6	L	C	GO	Fin	F	Strm	V	Own	Covt	DD	Bos	.....	Covt	U	3	Spic	Math	W	Tim	Flot	7.8	36.81	Gem	36x4	36x7	.....	.....	4800	160
D-Olt C	3250	Midwest	4 1/8x5 1/4	27.2	H	C	GO	PT	F	Zen	G	Dup	B-Li	DD	RBo	.....	B-Li	U	3	Spic	SP	W	Tim	.....	8.5	.....	Ros	36x5	36x4†	.....	.....	5350	168
Facto	2545	Buda EBU	4 1/4 x5 1/2	28.9	L	C	Bus	PT	FS	Zen	V	Pier	Full	D	Spl	.....	Full	A	4	Bld	SP	W	Tim	Flot	7.75	33.9	Ros	36x4	34x4	Smi	Fir	5800	155
Federal U2	.....	Cont K-4	4 1/8x5 1/4	27.2	L	C	Own	C	F	Zen	V	Phar	B.B.	DD	Eis	.....	Det	A	4	Spic	Math	W	Tim	Flot	7.75	45.6	Gem	36x4	36x7	Sch	Fir	5400	156
Garford 70 H	2750	Buda HTU	4 1/4 x5 1/2	28.9	L	C	Own	Fin	F	Strm	G	Sim	.....	DD	Spl	.....	Own	A	4	Spic	Per	W	Tim	Flot	7.75	.....	Ros	36x4	36x8	.....	.....	5300	144
Gary J	2850	Buda HTU	4 1/4 x5 1/2	28.9	L	C	Chic	Fin	FS	Zen	V	McC	Full	DD	Eis	.....	Full	U	4	Spic	Math	W	Tim	Flot	8.5	41	Ros	36x4	36x7	Pru	Gdy	5500	148
Gersix K	3500	Buda HTU	4 1/4 x5 1/2	28.9	L	C	Idl	C	F	Strm	V	Mon	B.B.	.....	Bos	.....	Cott	U	3	Bld	Tut	W	Own	.....	9.6	39	Ros	36x4	36x8	Jon	.....	5270	150
Giant 16	3150	Cont C-4	4 1/8x5 1/4	27.2	L	C	Own	.....	FS	Sheb	G	Mon	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Math	W	Tim	Flot	8.8	29.9	Ros	36x4	36x7	Way	.....	4500	168
Giant 16	3050	Cont C-4	4 1/8x5 1/4	27.2	L	C	Own	.....	FS	Sheb	G	Mon	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Math	W	Tim	Flot	8.8	29.9	Ros	36x4	36x7	Way	.....	4500	144
Hall	.....	Cont C-4	4 1/8x5 1/4	27.2	L	C	Own	H	FS	Zen	G	Dup	B-Li	DD	Bos	.....	B-Li	U	3	Opt	Det	W	Tim	Flot	7.7	.....	Gem	36x4	36x4	Smi	.....	4525	156
Harvey WFB	2950	Buda ETU	4 1/4 x5 1/2	28.9	L	C	Own	Fin	F	Strm	G	McC	Full	DD	Spl	.....	B-Li	A	4	Spic	Shel	W	Shel	1/2 Fl	7.75	37.5	Ros	36x4	36x7	StM	.....	5600	160
*Hendrickson N	3200	Buda ETU	4 1/4 x5 1/2	28.9	L	C	Chic	PT	F	Strm	G	McC	Full	D	Spl	.....	Full	A	4	Ther	Tut	W	Tim	Flot	7.7	37.2	Ros	36x4	36x7	Stn	.....	.....	Op
*Hurlburt A	2500	Buda HU	4 1/4 x5 1/2	28.9	L	C	Own	Fin	F	Zen	G	Sim	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Per	W	Own	.....	6.5	.....	Ros	36x4	36x4†	Way	.....	4285	148
Independent HI (Iowa)	2940	Cont K-4	4 1/8x5 1/4	27.2	L	C	Chic	PT	FS	Strm	V	.....	Full	DD	Bos	.....	Full	U	4	Bld	Tut	I	Russ	D	10	.....	Lav	36x4	36x7	StM	Fir	4950	156
Indiana 25	.....	Own 38	4 1/8x5 1/2	27.2	L	C	McC	Fin	F	Strm	G	Pier	B.B.	DD	Eis	.....	B-Li	A	4	Spic	Shel	W	Shel	1/2 Fl	7.75	41.3	Woh	36x4	36x8	Day	.....	5850	156
International 52-Bus	3500	Own	4 1/4 x5	28.9	H	T	Own	Fin	FS	Ens	V	Own	Own	DD	Spl	Own	Own	A	4	Own	.....	I	Own	D	4.85	25	Own	.....	.....	Own	.....	5515	190
Kalamazoo HD	3350	Wis UAU	4 1/4 x6	28.9	L	C	GO	PT	F	Strm	V	Pier	Full	D	Bos	Dy	Full	A	4	Bld	Shel	W	Shel	1/2 Fl	9.5	57	Ros	36x5	36x10	Smi	.....	6720	144
Kalamazoo NH	3145	Wis TAU	4 x6	25.6	L	C	GO	PT	F	Strm	V	Pier	Full	D	Bos	Dy	Full	A	4	Bld	Shel	W	Shel	1/2 Fl	8.75	42.8	Ros	36x5	36x10	Smi	.....	6400	160
Kelly-Springfield K35	2900	Own	3 3/4 x5 1/4	22.5	L	C	Lng	Fin	F	Zen	G	Pier	Own	C	Eis	DL	Covt	A	3	.....	Per	C	Own	D	10.6	35.11	Gem	36x4	36x4†	StM	.....	4850	Op
Kelly Springfield K38	2900	Own	3 3/4 x5 1/4	22.5	L	C	Lng	Fin	F	Zen	G	Pier	B.B.	D	Eis	DL	Covt	A	4	Pet	Per	W	Own	1/2 Fl	11.6	35.03	Gem	36x4	36x4†	StM	.....	5300	Op
Kissel Freighter	2875	Own 50000*	4 1/4 x5 1/2	28.9	L	C	McC	PT	S	Strm	V	Pier	W-Gr	DD	Eis	.....	W-Gr	A	4	Spic	.....	W	Tim	Flot	8.5	42.5	Jac	36x4	36x8	Pru	.....	5100	168
Kleiber B	.....	Cont L-4	4 1/2 x5 1/2	32.4	L	C	RT	PT	FS	Strm	G	Sim	.....	DD	Bos	.....	B-Li	A	4	Spic	.....	W	Tim	Flot	7.75	37.51	Ros	36x5	36x8	Smi	.....	6000	160
Koehler M	3175	Her	4 x5 1/8	25.6	L	G	Own	PT	F	Zen	G	Sim	B-Li	DD	Spl	.....	B-Li	A	4	Spic	Math	W	Tim	Flot	9.25	37	Lav	36x4	36x7	Way	.....	5050	162
Koehler MCS	3275	Her	4 x5 1/8	25.6	L	G	Own	PT	F	Zen	G	Sim	B-Li	DD	Spl	.....	B-Li	A	4	.....	Math	W	Tim	Flot	9.25	37	Lav	36x4	36x7	Way	.....	5000	150
Lange E	3450	Cont K-4	4 1/8x5 1/4	27.2	L	C	Own	H	F	Strm	V	.....	B-Li	DD	Bos	.....	B-L	A	4	Pet	SP	W	Tim	Flot	9.25	49.5	Ros	36x4	36x7	Hoo	Opt	5800	Op
*Larrabee K5	3450	Cont L-4	4 1/2 x5 1/2	32.4	L	C	R-T	PT	F	Zen	G	Phar	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Shel	W	Shel	1/2 Fl	8.75	47	Ros	36x4	36x8	Smi	.....	5700	176
Mack AB	3400	Own AB	4 1/4 x5	28.9	L	C	Own	C	S	Zen	G	Own	Own	DD	Spl	.....	Own	U	4	Spic	Mer	C	Own	D	8.98	43.5	Own	36x4	36x4†	.....	.....	5200	Op
Mack AB	3850	Own AB	4 1/4 x5	28.9	L	C	Own	C	S	Zen	G	Own	Own	DD	Spl	.....	Own	U	4	Spic	Mer	R	Own	Flot	9.25	44.9	Own	36x4	36x4†	.....	.....	5600	Op
Master DD	3190	Buda HU	4 1/4 x5 1/2	28.9	L	C	Chic	PT	F	Mas	V	McC	Full	DD	Eis	.....	Full	U	4	Spic	Det	R	Walk	Flot	Opt	Opt	Ros	34x4	36x8	Wal	.....	4500	144
Master DDL	3290	Buda HU	4 1/4 x5 1/2	28.9	L	C	Chic	PT	F	Mas	V	McC	Full	DD	Eis	.....	Full	U	4	Spic	Det	R	Walk	Flot	Opt	Opt	Ros	34x4	36x8	Wal	.....	4600	170
Master W	2890	Buda HU	4 1/4 x5 1/2	28.9	L	C	Chic	PT	F	Mas	V	McC	Full	DD	Eis	.....	Full	U	4	Spic	Det	W	Tim	Flot	Opt	Opt	Ros	34x4	36x8	Pru	.....	4500	144
Master WL	2990	Buda HU	4 1/4 x5 1/2	28.9	L*	C	Chic	PT	F	Mas	V	McC	Full	DD	Eis	.....	Full	U	4	Spic	Det	W	Tim	Flot	Opt	Opt	Ros	34x4	36x8	Pru	.....	4600	170

| | | |

Trade Name and Model	Chassis Price	ENGINE DETAILS: Make and Model Number & Cylinder unless otherwise noted	Bore and Stroke	N. A. C. C. Horsepower	Valve Arrang't	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	GEARSET: Make	Location	Speeds	Universal (Make)	Springs (Make)	REAR AXLE: Final Drive	Make	Type	Total Gear Reduction in High	Total Gear Reduction in Low	Steering Gear (Make)	TIRES, WHEELS, RIMS (*Pneumatic †Dual ‡Solid): Front	Rear	Wheels (Make)	Rim Equipment	Chassis Weight (Stripped)	Wheelbase
		1			2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20			21			22	23		
3½ Ton																																		
Acason L.	.....	Wau CU	4 3/16x5 3/4	30.6	L	G	Can	C	FS	Sheb	V	Wau	Det	.....	Eis	.....	Cott	A	4	Bld	Det	W	Tim	Flot	8.75	48.5	Ros	36x5	36x5†	Smi	Opt	7000	180
Armleder KWB	4200	Buda YTU	4½x6	32.4	L	C	Own	Fin	F	Zen	G	Phar	B-Li	DD	Bos	.....	B-Li	U	4	Spic	Math	W	Tim	Flot	10.33	55.25	Ros	36x5	36x5†	StM	.....	6900	156
Armleder KWC	4200	Cont E-4	4½x5½	32.4	L	C	Own	Fin	S	Zen	G	Phar	B-Li	DD	Bos	.....	B-Li	U	4	Spic	Math	W	Tim	Flot	10.33	55.25	Ros	36x5	36x5†	StM	.....	6900	156
Atterbury 22DX Short	4375	Cont L-4	4½x5½	32.4	L	C	Own	Fin	F	Zen	V	Pier	B-Li	DD	Eis	.....	B-Li	A	4	Spic	SP	W	Tim	Flot	10.33	55.26	Gem	36x5	40x6†	Arc	.....	7500	150
Atterbury 22D Std.	4275	Cont L-4	4½x5½	32.4	L	C	Own	Fin	F	Zen	V	Pier	B-Li	DD	Eis	.....	B-Li	A	4	Spic	SP	W	Tim	Flot	10.33	55.26	Gem	36x5	40x6†	Arc	.....	7500	174
Atterbury 22D LWB	4375	Cont L-4	4½x5½	32.4	L	C	Own	Fin	F	Zen	V	Pier	B-Li	DD	Eis	.....	B-Li	A	4	Spic	SP	W	Tim	Flot	10.33	55.26	Gem	36x5	40x6†	Arc	.....	7500	198
*Autocar Y	4200	Own	4¼x5½	28.9	L	C	Own	Fin	S	Strm	G	Phar	Own	DD	.....	.....	Own	A	4	Spic	Del	R	Own	Flot	8.7	52.3	Ros	34x6	36x12	Hoo	.....	7200	120
Available H	4175	Her MU-3	4½x5½	32.4	L	C	Own	Chic	Fin	FS	Strm	V	Pier	B-Li	DD	Bos	.....	B-Li	A	4	M-E	Tut	W	Tim	Flot	10.33	49.99	Ros	36x5	40x5†	Sch.	.....	6500	176
Bridgeport 4C	3990	Buda YTU	4½x6	32.4	L	G	Own	Fin	FS	Strm	G	Pier	B.B.	D	Eis	.....	B-Li	A	4	Hart	Per	W	Eat	.....	9.25	.....	Ros	36x5	36x10	Jon	Fir	10500	170
Brockway R	.....	Cont L-4	4½x5½	32.4	L	C	Bus	Fin	F	Strm	V	Phar	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Mer	W	Tim	Flot	8.75	46.8	Gem	36x5	36x5†	Smi	.....	6800	164
Chicago C	.....	Her MU-3	4½x5½	32.4	L	C	Brm	PT	FS	Strm	G	Sim	B-Li	D	Bos	.....	B-Li	A	4	Pet	Math	R	Huck	Flot	9.33	50	Gem	36x5	36x10	Opt	Sta	7200	168
*Clydesdale 6	3650	Cont L-4	4½x5½	32.4	L	C	Own	PT	F	Zen	V	Own	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Stan	W	Tim	Flot	9.25	49.5	Ros	36x5	36x5†	.....	.....	5500	163
*Day Elder F	.....	Cont E-4	4½x5½	32.4	L	C	Bus	Fin	FS	Zen	G	Mon	B-Li	DD	Eis	.....	B-Li	U	4	Hart	Shel	W	Shel	½Fl	10.25	41	Gem	36x5	36x5†	Jon	Fir	5600	165
Dependable G	3550	Buda YTU	4½x6	32.4	L	C	Lng	Fin	F	Zen	V	Mon	Full	DD	Spl	AL	Full	A	4	Acm	Per	W	Wis	½Fl	10	47.61	Ros	36x6	36x10	Bim	Fir	6000	165
Diamond TK	3750	Hin	4¼x5½	28.9	L	C	GO	Fin	F	Strm	V	Own	Covt	DD	Bos	.....	Covt	A	4	Spic	Math	W	Tim	Flot	8.8	44.36	Gem	36x5	36x5†	.....	.....	7250	170
Dixon	4070	Cont E-4	4½x5½	32.4	L	C	GO	PT	FS	Zen	G	Pier	Full	.....	Apo	.....	Full	U	4	Hart	IC	W	Tim	Flot	Opt	Opt	Ros	36x5	36x10	Smi	.....	6650	160
Dorris K7	4400	Own	4¼x5½	28.9	H	C	McC	Fin	F	Strm	G	Own	Own	DD	Bos	W	W-Gr	A	4	Spic	Row	W	Tim	Flot	10.33	51.5	Ros	36x5	36x10	Smi	Fir	6750	194
Duplex E	3500	Buda TU	4¼x5½	28.9	H	C	Lng	ZZT	FS	Sheb	V	Dup	B-Li	DD	Eis	.....	B-Li	U	4	Pet	Tut	I	Own	D	8	64	Woh	36x8	36x8	Pru	.....	6075	130
Gary KT	3790	Buda YTU	4½x6	32.4	L	C	Chic	Fin	F	Zen	V	McC	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Math	W	Tim	Flot	10.33	50	Ros	36x5	40x10	Pru	.....	7500	162
Giant 17	4150	Cont E-4	4½x5½	32.4	L	C	Own	.....	B	Strm	G	Mon	.....	DD	Eis	.....	B-Li	A	4	Spic	Shel	W	Tim	Flot	10.25	49.61	Ros	36x5	36x5†	Way	.....	6800	176
G. M. C. K-71A	.....	Own	4½x6	32.4	L	B	Own	Fin	F	Mar	G	Own	Own	DD	Eis	Opt	Own	A	7	Own	Det	W	Tim	Flot	8.75	75.2	Own	36x5	40x5†	Own	.....	7945	163
G. M. C. K-71B	.....	Own	4½x6	32.4	L	B	Own	Fin	F	Mar	G	Own	Own	DD	Eis	Opt	Own	A	7	Own	Det	W	Tim	Flot	8.75	75.2	Own	36x5	40x5†	Own	.....	8070	187
G. M. C. K-71T	.....	Own	4½x6	32.4	L	B	Own	Fin	F	Mar	G	Own	Own	DD	Eis	Opt	Own	A	7	Own	Det	W	Tim	Flot	10.33	88.83	Own	36x5	40x12	Own	.....	7885	138
Gramm-Pioneer 75P	4225	Hin HA 200	4½x5½	32.4	L	C	Own	Fin	F	Strm	G	Hin	Own	DD	Eis	NE	Own	A	4	Own	Per	W	Shel	½Fl	9.5	45	Ros	36x6*	42x9*	Smi	.....	6000	...
Hal-Fur B	3000	Hin HA 500	4½x5½	28.9	L	G	GO	PT	F	Strm	V	Hin	B.B.	DD	Bos	W	Own	A	4	Pet	Per	W	Tim	Flot	7.75	57.4	Gem	36x6	Opt	Smi	Fir	5000	Op
Hal -Fur F	4000	Hin AA1600	4½x5½	32.4	H	C	GO	PT	F	Strm	V	Hin	B.B.	DD	Bos	W	Own	A	4	Pet	Mer	W	Tim	Flot	10.33	72	Gem	36x5	40x10	.....	.....	6500	180
Hall	.....	Cont E-4	4½x5½	32.4	L	T	Own	PT	FS	Zen	G	Dup	B-Li	DD	Bos	.....	B-Li	A	..	Opt	Det	W	Tim	Flot	10.	.....	Gem	36x5	36x5†	Smi	.....	6525	144
Harvey WHB	3950	Buda YTU	4½x6	32.4	L	C	Own	Fin	F	Strm	G	McC	Full	DD	Spl	.....	B-Li	A	4	Spic	Shel	W	Shel	½Fl	8.75	46.8	Ros	36x5	36x5†	StM	.....	7600	160
*Hendrickson M	3725	Buda EBU	4¼x5½	28.9	L	C	Chic	PT	F	Strm	G	McC	Full	DD	Spl	.....	Full	A	4	Ther	Tut	W	Tim	Flot	10	49.6	Ros	36x5	36x5	Stn	.....	.....	Op
Hurlburt B	3150	Buda HU	4¼x5½	28.9	L	C	Own	Fin	FS	Zen	G	Sim	B-Li	D	Eis	.....	B-Li	A	4	Spic	Per	W	Own	Flot	8.75	41.91	Ros	36x5	36x5†	.....	.....	5600	170
Indiana 35	.....	Own 40	4 3/8x5½	30.6	L	C	McC	Fin	F	Strm	G	Pier	B.B.	DD	Eis	.....	B-Li	A	4	Spic	Shel	W	Shel	½Fl	10.2	54.84	Woh	36x5	36x10	Smi	.....	7050	160
Jackson B	3850	Cont E-4	4½x5½	32.4	L	G	Lng	Fin	FS	Strm	V	Pier	B.B.	DD	Eis	Dy	Own	A	4	Spic	Per	B	Own	Flot	9.2	43.49	Ros	36x7	36x7	.....	.....	7400	150
Kalamazoo SK	3845	Wis UAU	4¼x6	28.9	L	C	GO	PT	F	Strm	V	Pier	Full	D	Bos	Dy	Full	A	4	Bld	Shel	W	Shel	½Fl	10.25	61.5	Ros	36x5	36x12	Smi	.....	7520	160
Kelly-Springfield K-40	3900	Own	4½x6½	32.4	T	C	Lng	Fin	F	Zen	G	Pier	B.B.	D	Eis	DL	Covt	A	3	.....	Per	C	Own	D	10.49	31.69	Gem	36x5	40x5†	StM	.....	7730	Op
Kelly-Springfield K-41	3900	Own	4½x6½	32.4	T	C	Lng	Fin	F	Zen	G	Pier	B.B.	D	Eis	DL	Covt	A	4	Pet	Per	I	Clark	D	10	50.7	Gem	36x6	36x10	Cla	.....	7800	Op
Kelly-Springfield K-42	3900	Own	4½x6½	32.4	T	C	Lng	Fin	F	Zen	G	Pier	B.B.	D	Eis	DL	Covt	A	4	Pet	Per	W	Eat	½Fl	10.25	51.97	Gem	36x5	40x5	Smi	.....	8500	Op
Kleiber C	4470	Cont L-4	4½x5½	32.4	L	C	RT	PT	FS	Strm	G	Sim	.....	DD	Bos	.....	B-Li	A	4	Spic	.....	W	Tim	Flot	8.75	42.35	Ros	36x5	36x10	Smi	.....	7200	163
Koehler F	4470	Her	4½x5½	32.4	L	G	Own	PT	F	Zen	G	Pier	B-Li	DD	Spl	.....	B-Li	A	4	Spic	Math	W	Tim	Flot	10.33	.....	Lav	36x5	36x10	Day	.....	7000	162
*Larrabee L4	4000	Cont L-4	4½x5½	32.4	L	C	R-T	PT	S	Zen	G	Phar	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Mer	W	Shel	½Fl	10.25	55	Ros	36x5	36x10	Smi	.....	7600	186
Mack AC	4950	Own AC	5 x6	40	L	C	Own	Fin	S	Zen	G	Own	Own	DD	Spl	.....	Own	J	4	Spic	Mer	C	Own	D	7.54	48.37	Own	36x5	40x5†	.....	.....	8070	Op
Master A	3990	Buda YTU	4½x6	32.4	L	C	Chic	PT	F	Mas	V	Pier	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Det	W	Tim	Flot	Opt	Opt	Ros	36x5	40x5†	Smi	.....	8000	158
Master AL	4090	Buda YTU	4½x6	32.4	L	C	Chic	PT	F	Mas	V	Pier	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Det	W	Tim	Flot	Opt	Opt	Ros	36x5	40x5†	Smi	.....	8200	194
Master E	4290	Buda YTU	4½x6	32.4	L	C	Chic	PT	F	Mas	V	Pier	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Det	R	Wal	Flot	Opt	Opt	Ros	36x5	40x5†	Wal	.....	8000	158
Master EL	4390	Buda YTU	4½x6	32.4	L	C	Chic	PT	F	Mas	V	Pier	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Det	R	Wal	Flot	Opt	Opt	Ros	36x5	40x5†	Wal	.....	8200	194
Menominee G	3800	Wis VAU	4½x6	32.4	L	C	Own	Fin	FS	Strm	G	Mon	Det	DD	Eis	Opt	Cott	A	4	Spic	Tut	W	Tim	Flot	10.3	53.71	Ros	36x5	36x10	Smi	Fir	6750	160
*Nelson & LeMoon G 4	.....	Cont L-4	4½x5½	32.4	L	C	Chic	Fin	F	Strm	G	Phar	B-Li	DD	Bos	W	B-Li	U	4	Own	GC	B	Tim	Flot	8.7	42	Ros	36x5	36x5†	Pru	Gdy	6000	Op
*Noble E-71	3495	Buda YTU	4½x6	32.4	L	C	Chic	Fin	F	Strm	V	Pier	Full	DD	Eis	W	W-Gr	A	4	M-E	.....	W	Shel	½Fl	8.75	44	Lav	36x5	36x10	Bim	Fir	7200	182
Northway B3	4200	Own	4 x6	25.6	H	C	GO	C	F	Strm	V	Pier	Full	DD	Wag	Bj	Full	U	4	Spic	Per	W	Shel	½Fl	10	49.2	Ros	36x5	40x5†	Cla	Fir	7700	Op
Ogden F	.....	Cont L-4	4½x5½	32.4	L	G	Chic	Fin	F	Strm	G	Pier	B-Li	DD	Spl	.....	B-Li	A	4	M-E	Tut	W	Tim	Flot	10.33	.....	Ros	36x5	40x10	Stn	.....	7300	178
O.K.	3975	Buda YTU	4½x6	32.4	L	G	R-T	PT	FS	Zen	V	Pier	Full	DD	Eis	.....	Full	A	4	Hart	Cham	W	Wis	½Fl	10	60	Ros	36x5*	36x5†	Bim	.....	6350	164
Old Reliable C	4250	Wis VAU	4½x6	32.4	L	C	Chic	PT	F	Strm	V	Phar	Full	DD	Bos	.....	Full	A	4	Pet	Shel	W	Shel	½Fl	8.75	55.1	Ros	36x5	36x5†	Sch	.....	7000	Op
Oneida D	4050	Hin 200	4½x5½	33.5	L	C	Mod	C	F	Strm	V	Hin	Full	DD	Apo	.....	Full	A	4	Pet	Math	W	Tim	Flot	10.33	49.6	Ros	36x5	36x10	Smi	.....	7700	170
Packard ED	4100	Own	4½x5½	32.4	L	C	.....	Fin	F	Own	P	Own	Own	DD	Spl	Bj	Own	A	4	Spic	.....	W	Own	Flot	9	41.3	Own	36x5	36x5	.....	.....	7350	156
Paige 51-18	3145	Hin 200	4½x5½	32.4	L	C	Own	Fin	F	Strm	V	Sim	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Per	W	Tim	Flot	10.3	50.01	Ros	36x5	36x5†	Own	Fir	7000	160
Parker J-20	3950	Wis VAU	4½x6	32.4	L	C	Own	PT	F	Strm	V	Pier	B-Li	DD	Eis	W	W-Gr	A	4	Bld	Tut	W	Own	Flot	8.75	43.6	Ros	36x5	40x5†	Smi	.....	6550	160
Perfection E	2975	Cont K-4	4½x5¼	27.2	L	T	Own	.....	FS	Zen	V	Phar	B.B.	DD	Eis	Rm	Cott	A	4	Spic	Own	W	Tim	Flot	9.5	63	Lav	38x7	42x9	Bim	Fir	5700	138
Pierce Arrow W2	4350	Own	4½x6¾	32.4	T	C	Own	Fin	F	Strm	...	Own	Own	DD	Del	Opt	Own	A	4	.....	SP	W	Own	Flot	8	49	.....	36x5	36x5†	Day	.....	8350	162
Pittsburgher D	3800	Own	4½x5¼	27.2	T	C	GO	Fin	F	Strm	V	.....	B-Li	DD	Bos	.....	B-Li	U	4	Spic	.....	W	Own	.....	9.5	50.82	Ros	36x5	36x10	Smi	.....	6600	162
*Power C	4175	Hin HA200	4½x5½	32.4	L	C	GO	PT	F	Zen	G	Hin	B-Li	DD	Eis	W	B-Li	A	4	.....	Row	W	Tim	½Fl	10	48	Ros	36x5	40x10	StM	.....	7400	160
Rainier R-15	4400	Cont L-4	4½x5½	32.4	L	G	EM	PT	FS	Zen	V	Pier	B-Li	DD	Eis	.....	B-Li	A	4	Spic	SP	W	Tim	Flot	.....	.....	Ros	36x5	36x5†	.....	Fir	7000	170
Republic 20	3095	Cont E-4	4½x5½	32.4	L	C	Own	Fin	FS	Strm	G	Phar	Full	DD	Bos	.....	Full	A	4	Spic	Math	I	Torb	D	10.25	49.25	Jac	36x5	36x10	Smi	Fir	6520	165
Sandow	3695	.....	4½x5½	32.4	L	C	Chic	PT	FS	Strm	G	Mon	B-Li	.....	Bos	.....	B-Li	A	4	Spic	.....	W	Tim	.....	10.25	41.25	Ros	.....	.....	.....	.....	6800	172
Sanford W35B	.....	Cont E-4	4½x5½	32.4	L	G	McC	Fin	F	Strm	G	Pier	B.B.	DD	Eis	.....	B-Li	A	4	Spic	Shel	W	Shel	½Fl	8.7	34.8	Ros	36x5	36x5†	Hoo	Fir	6750	174
Sanford W-35D	.....	Cont E-4	4½x5½	32.4	L	G	McC	Fin	F	Strm	G	Pier	B.B.	DD	Eis	.....	B-Li	A	4	Spic	Shel	W	Shel	½Fl	8.7	34.8	Ros	36x5	36x5†	Hoo	Fir	6710	156
Selden Unit 70	3750	Cont E-7	4½x5½	32.4	L	C	Lng	Fin	FS	Strm	G	Pier	B-Li	D	Eis	.....	B-Li	A	4	Spic	Per	W	Tim	Flot	8.75	42.35	Gem	36x5	36x10	Stn	.....	7200	162
Selden Unit 51	4350	Cont E-4	4½x5½	32.4	L	C	Lng	Fin	FS	Strm	G	Pier	B-Li	DD	Eis	W	B-Li	A	4	Spic	Per	W	Tim	Flot	6	32	Gem	36x6	40x8	Stn	Opt	5650	179
Service 72	.....	Buda HU	4¼x5½	28.9	L	C	McC	Fin	F	Strm	V	.....	B.B.	DD	Eis	.....	B-Li	A	4	Spic	Shel	W	Tim	Flot	8.75	42.35	Ros	36x5	36x5†	Stn	.....	6930	171
Signal M	.....	Cont E-4	4½x5½	32.4	L	C	Lng	Fin	FS	Strm	G	Sim	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Det	W	Tim	Flot	12	58.08	Ros	36x5	40x10	StM	.....	7350	168
Signal ML	.....	Cont E-4	4½x5½	32.4	L	C	Lng	Fin	FS	Strm	G	Sim	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Det	W	Tim	Flot	12	58.08	Ros	36x5	40x10	StM	.....	7700	204
*Standard 3½K	3645	Cont L-4	4½x5½	32.4	L	C	Lng	Fin	F	Strm	V	Sim	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Am	W	Tim	Flot	10.3	55.1	Gem	36x5	36x12	Day	.....	7485	160
Sterling	4325	Wau	4½x6¼	32.4	L	C	Own	PT	F	Zen	V	Wau	H-S	WP	Eis	.....	Own	A	3	Spic	Math	W	Tim	Flot	8.75	39.5	Ros	36x5	40x5†	Pru	.....	8050	162
*Stewart 10X	.....	Buda YTU	4½x6	32	L	G	Bus	PT	F	Zen	G	Pier	Full	D	Eis	.....	Full	U	4	Hart	Det	I	Clark	D	10	48.01	Ros	36x5†	36x5†	Cla	Fir	.....	165
Super Truck 70	4100	Wis	4¼x6	28.9	L	C	Chic	Fin	F	Zen	G	Sim	Full	DD	Bos	.....	Full	A	4	Spic	Shel	W	Shel	½Fl	10.25	49.2	Ros	36x5	40x5†	Smi	.....	7500	164
Tiffin F35	3600	Cont L-4	4½x5½	32.4	L	C	Own	Fin	F	Strm	G	Pier	Det	DD	Bos	W	Cott	A	4	Pet	Vul	W	Shel	½Fl	8.7	44.5	Ros	36x5	40x5†	Smi	.....	7800	160

| | | |

Trade Name and Model	Chassis Price	ENGINE DETAILS: Make and Model Number 4 Cylinder unless otherwise noted	Bore and Stroke	N. A. C. C. Horsepower	Valve Arrange't	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	GEARSET: Make	Location	Speeds	Universal (Make)	Springs (Make)	REAR AXLE: Final Drive	Make	Type	Total Gear Reduction in High	Total Gear Reduction in Low	Steering Gear (Make)	TIRES, WHEELS, RIMS (*Pneumatic †Dual ‡Solid): Front	Rear	Wheels (Make)	Rim Equipment	Chassis Weight (Stripped)	Wheelbase
		1		2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20			21			22	23		
5 Ton—Con'd																																	
Parker M20	4850	Wis RBU	5 x6	40	L	C	Own	PT	F	Strm	V	Sim	B-Li	DD	Eis	W	W-Gr	A	4	Bld	Tut	W	Tim	Flot	10.25	51.1	Ros	36x6	40x6†	Smi	.....	8400	160
Pierce Arrow R10	4850	Own	4½x6¾	32.4	T	C	Own	Fin	F	Strm	...	Own	Own	DD	Del	Opt	Own	A	4	.....	SP	W	Own	Flot	10	61.2	.....	36x5	40x6†	Day	.....	9300	168
Rainier R-17	5100	Cont B-2	4¾x6	36.1	L	G	EM	Fin	F	Zen	V	Pier	B-Li	DD	.....	.....	B-Li	A	4	Spic	SP	W	Tim	Flot	.....	.....	Ros	36x6	36x6†	Smi	Fir	8000	170
Rowe FW	4850	Wis VAU	4½x6	32.4	L	C	Fed	H	F	Zen	G	Sim	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Shel	W	Shel	½Fl	10.25	40.7	Ros	36x6	40x6†	Hoo	.....	8300	169
Sandow	4325	.....	4½x5½	32.4	L	C	Chic	PT	FS	Strm	G	Mon	B-Li	.....	Bos	.....	B-Li	A	4	Spic	.....	W	Tim	.....	11	46.6	Ros	.....	.....	.....	.....	7800	175
*Sanford W50	.....	Cont E-4	4½x5½	32.4	L	G	McC	Fin	F	Strm	G	Pier	B.B.	DD	Eis	.....	B-Li	A	4	Spic	Shel	W	Shel	½Fl	10.75	52.03	Ros	36x5	40x6†	Hoo	Fir	8700	174
Schacht	4400	Wis VAU	4½x6	32.4	L	C	Own	PT	F	Zen	G	Dup	B.B.	D	Bos	.....	Own	A	4	Spic	Nat	W	Own	Flot	14	66.5	Own	36x5	40x6†	StM	.....	8200	168
Schwartz MS	4900	Buda YTU	4½x6	32.4	L	C	Fed	H	F	Strm	G	Sim	Full	D	Bos	.....	Full	A	4	ME	Row	W	Shel	½Fl	10.25	61.5	Ros	36x6	40x12	Smi	Fir	8285	156
Schwartz M	4900	Buda YTU	4½x6	32.4	L	C	Fed	H	F	Strm	G	Sim	Full	DD	Bos	.....	Full	A	4	ME	Row	W	Shel	½Fl	10.25	61.5	Ros	36x6	40x12	Smi	Fir	8365	170
Schwartz ML	4900	Buda YTU	4½x6	32.4	L	C	Fed	H	F	Strm	G	Sim	Full	DD	Bos	.....	Full	A	4	ME	Row	W	Shel	½Fl	10.25	61.5	Ros	36.6	40x12	Smi	Fir	8460	186
Selden Unit 90	4950	Cont B-5	4¾x6	36.1	L	C	Lng	Fin	F	Strm	G	Phar	Det	DD	Eis	.....	B-Li	A	4	Spic	SP	W	Tim	Flot	10.25	55	Gem	36x6	40x12	Stn	.....	9650	164
Signal R	.....	Cont B-2	4¾x6	36.1	L	C	Lng	Fin	FS	Strm	G	Sim	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Det	W	Tim	Flot	11.6	56.43	Ros	36x6	40x12	Smi	Gdy	9500	180
Standard 5K	4495	Cont B-5	4¾x6	36.1	L	C	Lng	Fin	F	Strm	V	Sim	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Am	W	Tim	Flot	11.66	62.3	Gem	36x6	40x14	Day	.....	8700	164
Sterling	4950	Wau EU	5 x6¼	40	L	C	Own	PT	F	Zen	V	Wau	H-S	WP	Eis	.....	Own	A	3	Spic	Math	W	Tim	Flot	8.8	39.69	Ros	36x6	40x6†	Pru	.....	9450	168
Sterling-Chain	5500	Wau EU	5 x6¼	40	L	C	Own	PT	F	Zen	V	Wau	H-S	WP	Eis	.....	Own	A	6	M-E	Math	C	Own	D	7.26	44	Ros	36x6	40x6†	Smi	.....	9950	174
Super Truck 100	4500	Wis	4¾x6	36.1	L	C	Chic	Fin	F	Zen	G	Sim	Full	DD	Spl	.....	Ful	A	4	Spic	Shel	W	Shel	½Fl	10.25	49.2	Ros	36x5	40x6†	Smi	.....	8500	164
Tiffin TW	4300	Cont B-2	4¾x6	36.1	L	C	Own	Fin	F	Sheb	G	Con	B.B.	DD	Bos	W	Cott	A	4	Pet	Vul	W	Shel	½Fl	10.25	53.3	Ros	36x6	40x6†	Smi	.....	8550	168
Titan 5	4100	Buda YTU	4½x6	32.4	L	C	BW	PT	F	Strm	G	Sim	B.B.	D	Eis	.....	Cott	A	4	Pet	Shel	I	Clark	D	11	59	Lav	36x5	40x12	Cla	.....	7900	156
*Transport 75	.....	Buda YTU	4½x6	32.5	L	C	Mod	C	F	Strm	G	Dup	B B.	DD	Eis	Opt	Cott	U	4	Hart	Det	I	Clark	Flot	10	51.1	Jac	36x5	36x12	Mot	.....	7600	170
*Traylor F	4700	Buda YTU	4½x6	32.6	L	C	GO	Fin	F	Zen	G	Sim	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Mer	W	Shel	½Fl	10.2	.....	Ros	36x6	40x6†	Smi	.....	9000	170
Ultimate D	5500	Buda BTU	5 x6½	40	L	C	Own	PT	F	Strm	G	Pier	B-Li	DD	Eis	Bos	B-Li	A	4	Spic	Shel	W	Shel	½Fl	8.75	46.8	Ros	36x6	40x14	Smi	.....	8600	180
United V	5000	Buda YTU	4½x6	32.4	L	C	Mod	H	F	Strm	G	Sim	Full	DD	Eis	Opt	Full	A	4	Spic	Shel	I	Shel	D	12.5	75.36	Ros	36x5	40x6†	Cla	.....	9150	160
U. S., T	.....	Buda ATU	4¾x6½	36.1	L	C	Lng	Fin	F	Strm	V	Sim	B-Li	DD	Eis	Opt	B-Li	A	4	Opt	Shel	W	Shel	½Fl	10.25	54.8	Lav	36x6	40x6†	Smi	.....	9700	172
*Walter S	5100	Own DU	4½x6¼	32.4	L	C	Bus	PT	F	Strm	G	.....	B-Li	DD	Bos	W	W-Gr	A	4	Own	Stan	R	Own	Flot	9	45	Ros	36x6	40x6†	Day	.....	8200	168
Ward La France A	4890	.....	5 x6¼	40	L	C	Own	Fin	F	Strm	G	.....	B-Li	DD	Bos	.....	B-Li	A	4	M-E	Row	W	Tim	Flot	8.8	47.08	Ros	36x6	40x6†	Smi	.....	9300	164
White 45	4500	Own	4¼x5¾	28.9	L	C	.....	Fin	F	Own	V	Own	Own	D	.....	.....	Own	U	4	Own	.....	R	Own	Flot	11.6	47.85	Own	36x6	40x6†	.....	.....	7950	174
Wilcox F	.....	Buda	4¾x6½	36.1	L	C	.....	PT	S	Strm	V	Dup	Own	C	Bos	.....	Own	A	4	Spic	Shel	R	Walk	½Fl	10.25	56.58	Own	36x5	40x12	Smi	.....	9000	162
Wilson H	4520	Cont	4¾x6	36.1	L	G	Lng	Fin	FS	Hol	V	Pier	B.B.	D	Eis	.....	Cott	A	4	KB	Per	W	Tim	Flot	10.25	42.35	Ros	36x6	40x6†	Sm	.....	7500	160
Winther 109	4700	Wis VAU	4½x6	32.4	L	G	Brm	PT	F	Mas	V	Dup	B.B.	DD	Eis	W	B-Li	A	4	Bld	Math	I	Clark	D	12	60.5	Ros	36x5	40x6†	Cla	.....	8300	162
Wisconsin E (Sioux City)	3500	Wau DU	4½x6¼	32.4	L	C	Chic	PT	F	Strm	V	Wau	B-Li	DD	Eis	Opt	B-Li	A	3	Spic	Det	W	Tim	Flot	9.25	.....	Lav	36x5	36x10	.....	Gdy	7000	148
5½, 6 and 7 Ton																																	
Garford 150 A-7½	5200	Buda BTU	5 x6½	40	L	C	Own	Fin	F	Strm	G	Sim	.....	DD	Spl	.....	Own	J	4	Spic	Per	C	Own	D	11.44	.....	Ros	36x6	40x7†	.....	.....	10200	162
Hall 7 Chain	.....	Cont E-4	4½x5½	32.4	L	T	Own	Fin	FS	Zen	G	Dup	B-Li	DD	Bos	.....	B-Li	J	..	Opt	Det	C	.....	D	12	.....	Gem	36x5	40x6†	Smi	.....	8100	144
Hurlburt E-E	4850	Buda ATU	4¾x6½	36.1	L	C	.....	Fin	F	.....	...	Sim	.....	DD	Eis	.....	.....	A	4	.....	.....	W	.....	Flot	10.25	.....	.....	36x6	40x6	.....	.....	9965	Op
Kelly-Springfield K-60	4600	Own	4½x6½	32.4	T	C	Lng	Fin	F	Zen	G	Pier	B.B.	D	Eis	DL	Covt	A	4	.....	Per	C	Own	D	12.41	50.26	Gem	36x6	40x7†	Smi	.....	9000	Op
Kelly-Springfield K61	4800	Own	4½x6½	32.4	T	C	Lng	Fin	F	Zen	G	Pier	B.B.	D	Eis	DL	Covt	A	4	Pet	Per	I	Clark	D	11.6	61.8	Gem	36x6	36x7	Cla	.....	9025	Op
MacDonald A	5750	Buda YTU	4½x6	32.4	L	C	Own	PT	F	Strm	G	Sim	B-Li	DD	Spl	.....	B-Li	U	4	Own	Own	I	Own	D	17.5	77	Own	40x7	Opt	Opt	.....	6000	...
Mack AC6½	5750	Own AC	5 x6	40	L	C	Own	Fin	S	Zen	G	Own	Own	DD	Spl	.....	Own	J	4	Spic	Mer	C	Own	D	8.95	57.41	Own	36x6	40x12	.....	.....	8672	Op
Mack AC7½	6000	Own AC	5 x6	40	L	C	Own	Fin	S	Zen	G	Own	Own	DD	Spl	.....	Own	J	4	Spic	Mer	C	Own	D	9.69	62.20	Own	36x7	40x7†	.....	.....	8950	Op
*Old Reliable L	6000	Wau P	4¾x6¾	36.1	L	C	Chic	PT	S	Strm	G	Phar	Own	WP	Bos	.....	Own	J	4	Pet	Shel	C	Own	D	10.07	50.65	Ros	36x6	40x7†	Sch	.....	10250	Op
Schacht 7	5050	Wis VAU	4½x6	32.4	L	C	Own	PT	F	Zen	G	Dup	B.B.	D	Bos	.....	Own	A	4	Spic	Nat	W	Own	Flot	14	66.5	Own	36x6	40x7†	StM	.....	8500	168
*Service 102	.....	Buda YTU	4½x6	32.4	L	C	Lng	Fin	F	Strm	V	.....	.....	DD	Eis	.....	B-Li	A	4	Spic	Shel	W	Tim	Flot	10.25	54.84	Ros	36x6	40x6†	Stn	.....	8760	171
Sterling 7½-Chain	6000	Wau	5 x6¼	40	L	C	Own	PT	F	Zen	V	Wau	H-S	WP	Eis	.....	Own	A	6	M-E	Math	C	Own	D	7.26	44	Ros	36x6	40x7†	Smi	.....	10700	174
Tiffin 6 U-W	4500	Cont B-2	4¾x6	36.1	L	C	Own	Fin	F	Sheb	G	Con	B.B.	DD	Bos	W	Cott	A	4	Pet	Vul	W	Shel	½Fl	10.25	53.3	Ros	36x6	40x12	Smi	.....	9200	168
*Walter R	5400	Own DU	4½x6¼	32.4	L	C	Bus	PT	F	Strm	G	.....	B-Li	D	Eis	W	W-Gr	A	4	Own	.....	...	Own	Flot	11	55	Ros	36x6	40x7†	Day	.....	8500	168
Wichita S	5000	Wau DU	4½x6¼	32.4	L	G	.....	PT	F	Strm	G	Wau	Own	C	Wag	.....	Own	A	4	Own	Det	R	Own	½Fl	14	66.3	Ros	36x6	40x6†	Smi	.....	10000	165
Winther 140	.....	Wis-RBU	5 x6	40	L	G	Brm	PT	F	Mas	V	Dup	B.B.	DD	Eis	W	B-Li	A	4	Bld	Math	I	Clark	D	12	60.5	Ros	36x6	40x7†	Cla	.....	9600	162
Gasoline Tractor-Trucks																																	
Buffalo Six 2½	3400	Her CU-3	4 x5⅛	25.6	L	C	Own	PT	F	Zen	V	Sim	Covt	D	Bos	Bos	Covt	...	10	Spic	Shel	W	Shel	½Fl	8.75	170	Ros	Opt	Opt	Jon	Gdy	6200	Op
Federal Light Duty	.....	Cont K-4	4½x5½	27.2	L	C	Own	Fin	F	Zen	V	Phar	B.B.	DD	Eis	.....	Det	A	4	Spic	Math	W	Tim	Flot	8.5	50.15	Gem	36x4	36x7	Sch	Fir	5000	120
Federal Heavy Duty	.....	Cont L-4	4½x5½	32.4	L	C	Own	Fin	F	Zen	V	Phar	B.B.	DD	Eis	.....	W-Gr	A	4	Spic	Math	W	Tim	Flot	12	59.8	Gem	36x5	36x5†	Smi	Fir	6800	125
Fulton D	2550	H-Sp 7000	3½x5	19.6	L	T	GO	H	FS	Cart	G	.....	Covt	DD	Ber	.....	Covt	...	3	UP	.....	I	Russ	D	10.2	.....	Lav	36x4	36x6	Hoo	.....	3300	110
Harvey WFT	3050	Buda ETU	4¼x5½	29	L	C	Own	Fin	F	Strm	G	McC	Full	DD	Spl	.....	B-Li	A	4	Spic	Shel	W	Shel	½Fl	9.5	45.9	Ros	36x5	36x10	StM	.....	5660	125
Harvey WHT	4050	Buda YTU	4½x6	32.4	L	C	Own	Fin	F	Strm	G	McC	Full	DD	Spl	.....	B-Li	A	4	Spic	Shel	W	Shel	½Fl	10.2	54.7	Ros	36x6	36x12	StM	.....	7800	125
International 62 3 Ton	2600	Own	4¼x5	28.9	H	T	Own	Fin	FS	Ens	G	Own	Own	DD	Spl	Own	Own	A	4	Own	.....	I	Own	D	9	47.8	Own	.....	.....	Own	.....	.....	122
International 102 5 Ton	3800	Own	4¼x5	28.9	H	T	Own	Fin	FS	Ens	G	Own	Own	DD	Spl	Own	Own	A	4	Own	.....	I	Own	D	11	58.4	Own	.....	.....	Own	.....	.....	122
Koehler MT	3275	Her	4 x5⅛	25.6	L	G	Own	PT	F	Zen	G	Sim	B-Li	DD	Spl	.....	B-Li	A	4	Spic	Math	W	Tim	Flot	9.25	37	Lav	36x4	36x7	Way	.....	5000	129
Lombard 140 H.P	.....	Spec 6	5¾x7	72.7	L	C	Spec	H	F	Strm	P	.....	.....	D	.....	.....	Own	A	...	.....	.....	W	.....	.....	.....	.....	Spe	.....	.....	.....	.....	18000	...
Lombard 60 H.P	.....	Spec 4	5½x6½	42	L	C	Spec	H	F	Strm	P	.....	.....	D	.....	.....	Own	A	...	.....	.....	W	.....	.....	.....	.....	Spe	.....	.....	.....	.....	8000	...
Mack AB 5-Ton	3400	Own AB	4¼x5	28.9	L	C	Own	C	S	Zen	G	Own	Own	DD	Spl	.....	Own	J	4	Spic	Mer	C	Own	D	10.5	42.27	Own	36x4	36x4†	.....	.....	4940	120
Mack AC 7-Ton	4950	Own AC	5 x6	40	L	C	Own	Fin	S	Zen	G	Own	Own	DD	Spl	.....	Own	J	4	Spic	Mer	C	Own	D	9.69	62.20	Own	36x5	40x5†	.....	.....	7670	120
Mack AC 10-Ton	5500	Own AC	5 x6	40	L	C	Own	Fin	S	Zen	G	Own	Own	DD	Spl	.....	Own	J	4	Spic	Mer	C	Own	D	10.5	67.38	Own	36x6	40x6†	.....	.....	8250	120
Mack AC 13-Ton	5750	Own AC	5 x6	40	L	C	Own	Fin	S	Zen	G	Own	Own	DD	Spl	.....	Own	J	4	Spic	Mer	C	Own	D	11.58	74.29	Own	36x6	40x12	.....	.....	8272	120
Mack AC 15-Ton	6000	Own AC	5 x6	40	L	C	Own	Fin	S	Zen	G	Own	Own	DD	Spl	.....	Own	J	4	Spic	Mer	C	Own	D	12.92	82.92	Own	36x7	40x7†	.....	.....	8650	120
Master DDT	3390	Buda HU	4¼x5½	28.9	L	C	Chic	PT	FS	Mas	V	McC	Full	DD	Eis	.....	Full	U	4	Spic	Det	R	Walk	Flot	Opt	Opt	Ros	34x4	36x7	Wal	.....	4500	Op
*Walter FT	6500	Own DU	4½x6¼	32.4	L	C	Bus	PT	F	Strm	V	.....	M-E	DD	Eis	W	Own	...	5	Own	.....	...	Own	Flot	8.5	85	Ros	40x7	40x7†	Day	.....	8500	100
Watson	4050	Cont E-4	4½x5½	32.4	L	C	Jam	C	FS	Strm	G	Pier	B-Li	DD	Sim	.....	B-Li	U	4	Spic	Shel	W	Tim	Flot	8.75	42.35	Gem	34x4	36x5†	C&M	.....	6500	180

ELECTRIC COMMERCIAL CARS

E. C. M. Name and Model Number	Carrying Capacity	Chassis Weight	Chassis Price	Maximum Speed	Battery	Mileage Per Charge	Motor	Controller	Speeds Forward	Drive	Rear Axle	Springs	Front Tires	Rear Tires	Steering Gear	Wheelbase	Per Cent of Weight on Rear Wheels
Atlantic 1C	2000	2770	.....	12	Opt	.....	G-E	G-E	4	C	Timk	S-El	34x4	36x4	Ross	193	65
Atlantic 2C	4000	3590	.....	11	Opt	.....	G-E	G-E	4	C	Timk	S-El	34x4	36x3†	Ross	115	65
Atlantic 3C	7000	5220	.....	10	Opt	.....	G-E	G-E	5	C	Timk	.....	36x5	40x5†	Ross	135	65
Atlantic 5C	10000	6230	.....	9	Opt	.....	G-E	G-E	5	C	Timk	S-El	36x6	40x5†	Ross	144	65
Atlantic 6C	13000	6940	.....	8	Opt	.....	G-E	G-E	5	C	Timk	S-El	36x6	40x6	Ross	156	65
C-T D-1	1000	2200	1585	14	Opt	55	G-E	Own	4	C-T	Flot	Shel	36x3	36x3½	W	100	69
C-T B-1.5	1500	2300	1985	14	Opt	60	G-E	Own	4	C-T	Flot	Shel	36x3	36x4	W	91½	65
C-T D-1.5	1500	2300	1985	14	Opt	60	G-E	Own	4	C-T	Flot	Shel	36x3	36x4	W	116	71
C-T B-2	2000	2400	2150	14	Opt	50	G-E	Own	4	C-T	Flot	Shel	36x3½	36x5	W	101	66
C-T D-2	2000	2400	2150	14	Opt	50	G-E	Own	4	C-T	Flot	Shel	36x3½	36x5	W	124	70
C-T B-4	4000	4000	2575	12	Opt	50	G-E	Own	4	C-T	Flot	Shel	36x4	36x4†	W	116	68
C-T C-6	6000	4300	2850	10	Opt	45	G-E	Own	4	I	Dead	Shel	36x4	36x4†	W	122	70
C-T C-7	7000	5000	3550	10	Opt	45	G-E	Own	4	I	Dead	Shel	36x5	36x5†	W	126	65
C-T A-7	7000	5800	3850	11	Opt	45	G-E	Own	4	I	Dead	Shel	36x6	36x4†	W	122	60
C-T A-10	10000	6500	3960	10	Opt	45	G-E	Own	4	I	Dead	Shel	36x7	36x5†	W	132	59
Kelland A	1000	1850	.....	15	Opt	50	G-E	G-E	4	R	Flot	Mer	34x3	34x3	Ross	102	60
Kelland B	1500	1950	.....	15	Opt	50	G-E	G-E	4	R	Flot	Mer	34x3½	34x3½	Ross	102	60
Kelland C	2000	2150	.....	15	Opt	50	G-E	G-E	4	R	Flot	Mer	34x3½	34x4	Ross	102	60
Lansden BG ¾	.....	1400	1600	15	Opt	50	G-E	G-E	4	R	Flot	SP	32x4½	32x4½	Lav	108	50
Lansden MC 1	.....	2900	1850	12	Opt	50	G-E	G-E	4	C	D	SP	36x3	36x3½	KH	108	60
Lansden MD 2	.....	4400	2250	11	Opt	50	G-E	G-E	4	C	D	SP	36x4	36x3†	KH	120	60
Lansden ME 3½	.....	5700	2950	10	Opt	45	G-E	G-E	4	C	D	SP	36x5	36x4†	KH	133	60
Lansden MF 5	.....	7500	3350	9	Opt	40	G-E	G-E	4	C	D	SP	36x6	36x5†	KH	146	60
Lansden MG 6	.....	8900	.....	7	Opt	35	G-E	G-E	4	C	D	SP	36x7	36x6†	KH	156	60
Milburn Model 40	2000	1990	1985	15	Opt	40	G-E	Own	4	.....	W	Math	32x4½	33x5	Gem	128	62
Milburn Model 43	1000	1690	1585	18	Opt	50	G-E	Own	4	.....	W	Math	32x4½	32x4½	Gem	115	56
Milburn Model 27D	500	1325	1085	20	Opt	50	G-E	Own	4	.....	W	Math	33x4	33x4	Gem	105	48
Steinmetz 15	1500	2300	1950	16	Opt	55	Diehl	Own	4	R	Russ	Shel	33x5	33x5	Lav	114	60
Walker 22	2000	2500	.....	14	Opt	60	West	West	5	O	Own	Math	34x3½	36x4	Ross	101	66
Walker 42	4000	3700	.....	13	Opt	60	West	West	5	O	Own	Math	36x4	36x6	Ross	114	66
Walker M.2	1250	2300	.....	15	Opt	60	West	West	5	O	Own	Math	34x3	36x3½	Ross	94	66
Walker N	10000	6300	.....	10	Opt	50	West	West	5	O	Own	Math	36x6	38x6†	Ross	141	66
Walker P	7000	5300	.....	11	Opt	50	West	West	5	O	Own	Math	36x5	38x5†	Ross	131	66
*Walter EN	4000	4400	3100	15	Opt	50	G-E	G-E	5	O	Dead	.....	36x4	36x7	Gem	114	60
*Walter EL	6000	4550	3700	13½	Opt	50	G-E	G-E	5	O	Dead	.....	36x5	36x4	Gem	132	60
*Walter ES	10000	7200	4500	12	Opt	50	G-E	G-E	5	O	Dead	.....	36x6	40x6	Ros	150	60
*Walter ER	14000	7500	4800	11	Opt	50	G-E	G-E	5	Own	Dead	.....	36x7	40x7	Ros	150	60
Ward WS 2	.....	1650	.....	13	Opt	75	G-E	Own	4	W	Shel	Shel	32x3	32x3½	Own	88	56
*Ward WA	.....	2860	.....	12	Opt	52⅓	G-E	G-E	4	W	Shel	Shel	32x3½	34x4	Own	90	61
Ward WA 2	.....	2470	.....	12	Opt	72⅓	G-E	Own	4	W	Shel	Shel	32x3½	34x4	Own	90	61
Ward WB	.....	3850	.....	10.5	Opt	45	G-E	G-E	4	W	Shel	Shel	34x4	36x5	Own	102	64
*Ward WB 2	.....	3350	.....	10.5	Opt	70	G-E	Own	4	W	Shel	Shel	34x4	36x5	Own	102	64
Ward WD	.....	4875	.....	9	Opt	50	G-E	G-E	4	W	Shel	Shel	36x5	36x7	Own	114	68
Ward WD 2	.....	4350	.....	9	Opt	60	G-E	G-E	4	W	Shel	Shel	36x5	36x7	Own	114	68
Ward WF	.....	7200	.....	8	Opt	40	G-E	G-E	5	W	Shel	Shel	36x6	36x10	Own	132	70
Ward WF 2	.....	6450	.....	8	Opt	40	G-E	G-E	5	W	Shel	Shel	36x6	36x10	Own	132	70
*Ward WH	.....	9400	.....	7	Opt	38	G-E	G-E	5	W	Shel	Shel	36x7	40x12	Own	146	71
*Ward WH 2	.....	8200	.....	7	Opt	38	G-E	G-E	5	W	Shel	Shel	36x7	40x12	Own	146	71
Ward WM	.....	2600	.....	12	Opt	65	G-E	Own	4	W	Shel	Shel	32x3½	32x4	Own	88	70
Ward WM 2	.....	2950	.....	12	Opt	60	G-E	Own	4	W	Shel	Shel	32x3½	32x5	Own	96	70

Manufacturers and Models Included in Specifications on Preceding Pages

Acason—¾, 1, 1½, 2½, 3½, 5—Acason Motor Truck Co., Detroit, Mich.
Ace—1½, 2½—American Motor Truck Co., Newark, Ohio.
★**Acme**—1, 1½, 2, 3, 4½, 6¼—Acme Motor Truck Co., Cadillac, Mich.
American—2½, 4, 5—American Motor Truck & Tractor Co., Portland, Conn.
Armleder—1, 1½, 2½, 3½—O. Armleder Motor Truck Co., Cincinnati Ohio.
Atco—1½, 2½—American Truck & Trailer Corp., Kankakee, Ill.
Atlantic—1, 2, 3, 5, 6—Atlantic Electric Vehicle Co., Newark, N. J.
★**Atlas**—1, 1½—Industrial Motor Corp., Rochester, N. Y.
★**Atterbury**—1½, 2½, 3½, 5—Atterbury Motor Car Co., Buffalo, N. Y.
★**Autocar**—1½, 2, 3½, 5—Autocar Co., Ardmore, Pa.
Available—1½, 2, 2½, 3½, 5—Available Truck Co., Chicago, Ill.
Avery—1—Avery Company, Peoria, Ill.
Bell—1, 1½, 2½—Iowa Motor Truck Co., Ottumwa, Ia.
Belmont—1, 1½, 2, 3—Belmont Motors Corp., Harrisburg, Pa.
Bessemer—1, 1½, 2½, 4—Bessemer Motor Truck Co., Grove City, Pa.
★**Bethlehem**—1, 2, 3—Bethlehem Motors Corp., Allentown, Pa.
Betz—7, 2½—Betz Motor Truck Co., Hammond, Ind.
Bridgeport—1½, 2½, 3½—Bridgeport Motor Truck Co., Bridgeport, Conn.
Brinton—1½, 2½—Brinton Motor Truck Co., Philadelphia, Pa.
Brockway—¾, 1½, 2½, 3½, 5—Brockway Motor Truck Co., Cortland, N. Y.
Brown—2½—Brown Truck Co., Duluth, Minn.
★**Buffalo**—1½, 2½, T.T.—Buffalo Truck and Tractor Corp., Clarence, N. Y.
C. T.—1, 1½, 2, 3½, 5—Commercial Truck Co., Philadelphia, Pa.
Casco—1—Casco Motors, Inc., Portland, Maine.
Case—2—J. I. Case Plow Works Co., Racine, Wis.
Chevrolet—¾, 1—Chevrolet Motor Co. of Mich., Flint, Mich.
Chicago—1½, 2½, 3½, 5—Chicago Motor Truck, Inc., Chicago, Ill.
Climber—1½—Climber Motor Corp., Little Rock, Ark.
Clydesdale—¾, 1, 1½, 2½, 3½, 5—Clydesdale Motor Truck Co., Clyde, Ohio.
Commerce—¾, 1¼, 1½, 2, 2½—Commerce Motor Truck Co., Detroit, Mich.
Concord—1½, 2, 2½, 3—Abbott-Downing Truck & Body Co., Concord, N. H.
Corbitt—¾, 1, 1½, 2, 2½, 3, 4, 5—Corbitt Motor Truck Co., Henderson, N. C.
Cyclone—1½—The Cyclone Motor Corp., Greenville, S. C.
★**Day-Elder**—1, 1½, 2, 2½, 3½, 5—Day-Elder Motors Corp., Newark, N. J.
Dearborn—1, 1½, 2—Dearborn Truck Co., Chicago, Ill.
Defiance—1, 1½, 2—Defiance Motor Truck Co., Defiance, Ohio.
★**Denby**—1¼, 2, 3, 4, 5—Denby Motor Truck Co., Detroit, Mich.
Dependable—1¼, 2, 2½, 3, 3½—Dependable Truck & Tractor Co., East St. Louis, Ill.
Diamond T—1¼, 1½, 2½, 3½, 5—Diamond T Motor Car Co., Chicago, Ill.
Diehl—1, 1½—Diehl Motor Truck Works, Philadelphia, Pa.
Dixon—3½—Dixon Motor Truck Co., Altoona, Pa.
Dodge—¾—Dodge Bros., Detroit, Mich.
D-Olt—1, 1½, 2½, 5—D-Olt Motor Truck Co., Inc., Long Island City, N. Y.
Dorris—1, 2, 3½—Dorris Motor Car Co., St. Louis, Mo.
Dort—½—Dort Motor Car Co., Flint, Mich.
Double Drive—4—Double Drive Truck Co., Benton Harbor, Mich.
Douglas—1½, 2, 3—Douglas Motors Corp., Omaha, Neb.
Drake—2—Drake Motor & Tire Mfg. Corp., Knoxville, Tenn.
★**Duplex**—2, 3½—Duplex Truck Co., Lansing, Mich.
Eagle—1¼, 2—Eagle Motor Truck Corp., St. Louis, Mo.
Eugol—1—Eugol Motor Truck Co., Chicago, Ill.
F. W. D.—3—Four-Wheel Drive Auto Co., Clintonville, Wis.
Facto—2½—Facto Motor Trucks, Springfield, Mass.
Fageol—2, 3, 4, 5—Fageol Motors Co., Oakland, Cal.
★**Federal**—¾, 1, 1½, 2, 3½, 5, T.T.—Federal Motor Truck Co., Detroit, Mich.
Ford—1—Ford Motor Co., Highland Park, Mich.
Forschler—1, 1½, 2, 3—Forschler Motor Truck Mfg. Co., New Orleans, La.
Front Drive—1½—Double Drive Truck Co., Benton Harbor, Mich.
Fulton—1, 2, T.T—Fulton Motors Corp., Farmingdale, N. Y.
★**G. M. C.**—1, 2, 3½, 5—General Motors Truck Co., Pontiac, Mich.
G. W. W.—1½—Wilson Truck Mfg. Co., Henderson, Ia.
★**Garford**—1, 1½, 2½, 4, 5, 7½—Garford Motor Truck Co., Lima, O.
Gary—1, 2, 2½, 3½, 5—Gary Motor Corp., Gary, Ill.
Gersix—1½, 2½, 3—Gersix Mfg. Co., Seattle, Wash.
Giant—2½, 3½—Giant Truck Corp., Chicago Heights, Ill.
Graham—1, 1½—Graham Brothers, Evansville, Ind.
★**Gramm-Bernstein**—1, 1½, 2, 3, 3½, 4, 5—Gramm-Bernstein Motor Truck Co., Lima, Ohio.
Hal-Fur—2, 3½—Hal-Fur Motor Truck Co., Cleveland, Ohio.
Hall—2½, 3½, 5, 7—Lewis-Hall Motors Corp., Detroit, Mich.
Harvey—2, 2½, 3½, 6, 10—Harvey Motor Truck Co., Harvey, Ill.
Hawkeye—1—Hawkeye Truck Co., Sioux City, Iowa.
Hendrickson—2½, 3½, 5—Hendrickson Motor Truck Co., Chicago, Ill.
Hug—1½—The Hug Co., Highland, Ill.
Hurlburt—1½, 2½, 3½, 5, 7—Harrisburg Mfg. & Boiler Co., Harrisburg, Pa.
Independent—1, 1½, 2½—Independent Motor Truck Co., Inc., Davenport, Ia.

★Indicates Advertisers. See Advertisers' Index.

Indiana—1, 1½, 2, 2½, 3½, 5—Indiana Truck Corp., Marion, Ind.
★**International**—¾, 1, 1½, 2, 2½, 3, 5—International Harvester Co., Chicago, Ill.
Jackson—3½—Jackson Motors Corp., Jackson, Mich.
Kalamazoo—1½, 2½, 3½, 5—Kalamazoo Motor Corp., Kalamazoo, Mich.
Kearns—1, 1½, 2—Kearns-Dughie Motors Co., Danville, Pa.
Kelland—Kelland Motor Car Co., Newark, N. J.
Kelly-Springfield—1½, 2½, 3½, 5, 6—Kelly-Springfield Motor Truck Co., Springfield, O.
Keystone—2—Keystone Motor Truck Corp., Oaks, Pa.
★**Kissel**—1, 1½, 2½, 4—Kissel Motor Car Co., Hartford, Wis.
Kleiber—1, 1½, 2, 2½, 3½, 5—Kleiber & Co., Inc., San Francisco, Cal.
Koehler—1½, 2½, 3½, 5, T.T.—H. J. Koehler Motors Corp., Bloomfield, N. J.
Lange—2, 2½—Lange Motor Truck Co., Pittsburgh, Pa.
Lansden—¾, 1, 2, 3½, 5, 6—Lansden Company, Danbury, Conn.
Larrabee-Deyo—1, 1½, 2½, 3½, 5—Larrabee-Deyo Motor Truck Co., Inc., Binghamton, N. Y.
Lombard—T.T.—Lombard Auto Tractor Truck Corp., New York, N. Y.
Luedinghaus—1, 1½, 2—Luedinghaus-Espenschied Wagon Co., St. Louis, Mo.
Maccar—1½, 2, 3, 4, 5—Maccar Truck Co., Scranton, Pa.
★**MacDonald**—7—Union Construction Co., San Francisco, Cal.
Mack—1½, 2, 2½, 3½, 5, 6½, 7½, T.T.—International Motor Co., New York, N. Y.
Mason Road King—1—Durant Motors, Inc., Long Island City, N. Y.
Master—1½, 2, 2½, 3½, 4, 5, T.T.—Master Trucks, Inc., Chicago, Ill.
Maxwell—1½—Maxwell Motor Co., Inc., Detroit, Mich.
Menominee—1, 1¼, 1½, 2, 3½, 5—Menominee Motor Truck Co., Clintonville, Wis.
Milburn—Milburn Wagon Co., Toledo, O.
Moreland—1, 1½, 2, 3, 5—Moreland Motor Truck Co., Burbank, Cal.
Napoleon—1, 1½—Napoleon Motors Co., Traverse City, Mich.
Nash—1, 2—Nash Motors Co., Kenosha, Wis.
Nelson-LeMoon—1, 1½, 2½, 3½, 5—Nelson & LeMoon, Chicago, Ill.
Netco—2, 2½—New England Truck Co., Fitchburg, Mass.
Niles—2½—South Main Motor Co., Pittsburgh, Pa.
Noble—1, 1¼, 2, 2½, 3½—Noble Motor Truck Co., Kendallville, Ind.
O. K.—1½, 2½, 3½—Oklahoma Auto Mfg. Co., Okay, Okla.
Ogden—¾, 1½, 2½, 3½, 5—Ogden Truck Co., Chicago, Ill.
Old Reliable—2½, 3½, 5, 6—Old Reliable Motor Truck Co., Chicago, Ill.
Oldsmobile—1—Olds Motor Works, Lansing, Mich.
Olympic—2½—Olympic Motor Truck Co., Tacoma, Wash.
Oneida—2, 2½, 3½, 5—Oneida Motor Truck Co., Green Bay, Wis.
Oshkosh—2, 2½—Oshkosh Motor Truck Mfg. Co., Oshkosh, Wis.
Overland—½—Willys-Overland Co., Toledo, O.
Packard—2, 3½, 5—Packard Motor Car Co., Detroit, Mich.
Paige—1½, 2½, 3½—Paige-Detroit Motor Car Co., Detroit, Mich.
Parker—1, 1½, 3, 3½, 5—Parker Motor Truck Co., Milwaukee, Wis.
Patriot—1, 2, 3—Patroit Mfg. Co., Navelock, Neb.
Penn—2—Penn Motors Corp., Philadelphia, Pa.
Perfection—¾, 1¼, 2, 3—Perfection Truck Co., Minneapolis, Minn.
★**Pierce-Arrow**—2, 3½, 5—Pierce-Arrow Motor Car Co., Buffalo, N. Y.
Pioneer—1—Pioneer Truck Co., Chicago, Ill.
Pittsburger—2, 3, 3½—Pittsburgh Truck Mfg. Co., Pittsburgh, Pa.
Power—1½, 3½—Power Truck & Tractor Co., St. Louis, Mo.
Premocar—1½—Preston Motors Corp., Birmingham, Ala.
Rainer—¾, 1, 1½, 2, 2½, 3½, 5—Rainer Motor Corp., Long Island City, N. Y.
Reliance—1½, 2½—Appleton Motor Truck Co., Appleton, Wis.
Reo—1¼—Reo Motor Car Co., Lansing, Mich.
Republic—¾, 1, 1½, 2½, 3½—Republic Motor Truck Co., Inc., Alma, Mich.
Reynolds—2, 3—Reynolds Truck Co., Mount Clemens, Mich.
★**Rowe**—1½, 2, 2½, 3, 4, 5—Rowe-Stuart Corp., Lancaster, Pa.
★**Ruggles**—1, 2—Ruggles Motor Truck Co., Saginaw, Mich.
Rumely—1½—Advance-Rumely Thresher Co., Inc., La Porte, Ind.
Samson—¾, 1¼—Samson Tractor Co., Janesville, Wis.
Sandow—1, 1½, 2½, 3½, 5—Moses & Morris Motors Corp., Chicago Heights, Ill.
Sanford—1, 1½, 2, 2½, 3½, 5—Sanford Motor Truck Co., Syracuse, N. Y.
★**Schacht**—2, 3, 4, 5, 7—G. A. Schacht Motor Truck Co., Cincinnati, O.
Schwartz—1, 2, 3, 5—Schwartz Motor Truck Co., Reading, Pa.
★**Selden**—1½, 2½, 3½, 5—Industrial Motor Corp., Rochester, N. Y.
Service—¾, 1¼, 1½, 3, 3½, 4—Service Motor Trucks Co., Wabash, Ind.
★**Signal**—1, 1½, 2½, 3½, 5—Signal Truck Corp., Detroit, Mich.
★**Standard**—1¼, 1½, 2½, 3½, 5—Standard Motor Truck Co., Detroit, Mich.
Steinmetz—Steinmetz Electric Motor Car Corp., Arlington, Baltimore, Md.
Sterling—1½, 2, 2½, 3½, 5, 7½—Sterling Motor Truck Co., Milwaukee, Wis.
★**Stewart**—1¼, 1½, 2½, 3½—Stewart Motor Corp., Buffalo, N. Y.
Superior—1, 2, 2½—Superior Motor Truck Co., Atlanta, Ga.
Super Truck—2½, 5—O'Connell Motor Truck Co., Waukegan, Ill.
Tiffin—1½, 2½, 3½, 5, 6—Tiffin Wagon Co., Tiffin, Ohio.
Titan—2½, 3½, 5—Titan Truck Co., Milwaukee, Wis.
Thomart Speed—1¼—Thomart Motor Co., Kent, Ohio.
Tower—1½, 2½, 3½—Tower Motor Truck Co., Greenville, Mich.
Traffic—1½, 2, 3—Traffic Motor Truck Corp., St. Louis, Mo.
★**Transport**—1, 1½, 2, 3, 3½, 5—Transport Truck Co., Mt. Pleasant, Mich.
★**Traylor**—1½, 2, 3, 5—Traylor Eng. & Mfg. Co., Cornwells, Pa.
Triangle—1, 1½, 2, 2½—Triangle Motor Truck Co., St. Johns, Mich.
Triumph—1½, 2, 2½—Triumph Truck & Tractor Co., Kansas City, Mo.
Twin City—2, 3½—Minneapolis Steel & Machinery Co., Minneapolis, Minn.
Ultimate—1½, 2, 2½, 3, 5—Vreeland Motor Co., Inc., Newark, N. J.
Union—2½, 4—Union Motor Truck Co., Bay City, Mich.
★**United**—1, 1½, 3½, 5—United Motor Products Co., Grand Rapids, Mich.
★**U. S.**—1¼, 1½, 2½, 3, 4, 5—United States Motor Truck Co., Cincinnati, Ohio.
Velie—1½, 2½—Velie Motors Corp., Moline, Ill.
★**Vim**—¾—Vim Motor Truck Co., Philadelphia, Pa.
★**Walker**—½, 1, 2, 3½, 5—Walker Vehicle Co., Chicago, Ill.
Walker-Johnson—2, 2½—Walker-Johnson Truck Co., Woburn, Mass.
★**Walter**—2, 2½, 5, T.T.—Walter Truck Co., New York, N. Y.
★**Ward**—¼, 1, 2, 3½, 5—Ward Motor Vehicle Co., Mt. Vernon, N. Y.
Ward La France—2½, 3½, 5—Walker Motors, Inc., New York, N. Y.
Watson—1, 3½, 5, T.T.—Watson Wagon Co., Canastota, N. Y.
White—¾, 2, 3½, 5—White Co., Cleveland, Ohio.
Wichita—1, 2, 3, 3½, 5½—Wichita Falls Motors Co., Wichita Falls, Tex.
Wilcox—1, 1½, 2½, 3½, 5—Wilcox Trux, Inc., Minneapolis, Minn.
Wilson—1½, 2½, 3½, 5—J. C. Wilson Co., Detroit, Mich.
Winter & Hirsch—2½, 3½—Winter & Hirsch Motor Truck Co., Chicago, Ill.
Winther—1, 1½, 2½, 3, 3½, 5, 7—Winther Motor Truck Co., Kenosha, Wis.
Wisconsin (Loganville)—2, 2½—Wisconsin Truck Co., Loganville, Wis.
Wisconsin (Sauk City)—1, 1½, 2½, 3½, 5—Wisconsin Farm Tractor Co., Sauk City, Wis.
Witt-Will—1½, 2—Witt-Will Co., Inc., Washington, D. C.
Yellow Cab—¾, 1¼—Yellow Cab Mfg. Co., Chicago, Ill.

★Indicates Advertisers. See Advertisers' Index.

How Display Trucks Supplant Display Trunks

Sample trunks are no longer carried by the up-to-date salesmen who call upon the druggists. Trucks fitted with shelves upon which the traveling representatives can display their samples, are now utilized by the wholesale firms and move from town to town, and stop directly in front of the pharmacies. Local dealers can make their selections in less time than when the samples are displayed at a hotel.

The wholesale firms also save in traveling expenses as every trunk represents a large sum in transportation costs each year. In addition, the salesmen can stop at the smaller cities when they use a truck and this permits them to serve dealers who were previously compelled to make trips to the metropolitan centers to do their buying. Meyer Bros., of St. Louis, is the first to adopt the truck system and have found that it is a great saving over the sample truck method, but also has numerous other advantages.

MEYER BROTHERS DRUG COMPANY
MEYER BROTHERS DRUG CO.
SAINT LOUIS U.S.A.
ESTABLISHED 1852
THE LARGEST DRUG HOUSE IN THE WORLD

General Motors Acquires Brown-Lipe-Chapin Line

Pierre S. duPont, president of General Motors, announces that the Corporation has acquired all of the outstanding stock of the Brown-Lipe-Chapin Co. General Motors has held a considerable interest in this company since it began business in 1910. The plants of the Brown-Lipe-Chapin Co. are located at Syracuse, N. Y.

H. W. Chapin, who, since the company started in business, has been general manager, has now been elected president, in the place of A. T. Brown.

Activities of the Motor Truck Association of Philadelphia

OFFICERS

F. W. WILLIAMS, President
W. A. MANWARING, Vice President
W. H. METCALF, Sec'y, 328 N. Broad Street
W. ROSS WALTON, Treasurer

BOARD OF GOVERNORS

F. A. WARNER
H. M. COLE
THOMAS K. QUIRK
D. H. ZIMMERMAN

THE COMMERCIAL CAR JOURNAL OFFICIAL ORGAN

"TRUCK Tire Night" and the election of officers featured one of the biggest and most enthusiastic meetings ever held by the Philadelphia Motor Truck Association at the Adelphia Hotel, January 17. More than 175 members and guests were present.

Charles Swain, of the nominating committee, presented the following ticket, which was unanimously elected: President, F. H. Williams; vice president, W. A. Manwaring; treasurer, W. Ross Walton; secretary, William H. Metcalf.

F. A. Warner and H. M. Cole were elected directors for a term of one year each, and Thomas K. Quirk, the retiring president, and D. H. Zimmerman, directors for two years each.

In turning over the chair to the new president Thomas K. Quirk thanked the members for the whole-hearted support that they gave him during his administration and appealed to them to work just as hard during 1923 under the leadership of Mr. Williams.

The new president made a hit with the big crowd when he announced that he will conduct the office in a fearless and impartial manner, and urged all the members to be regular in attendance at the monthly meetings, pointing out the many benefits that can be derived between the truck association and public in general. A toast to the retiring president was sponsored by Mr. Williams.

Then followed five entertaining and instructive talks by prominent Philadelphia tire men, who spoke on the service, abuse, ways to conserve rubber, overloading of trucks and the general harm of truck tires. These speakers included W. C. Sweizer; of the Firestone Tire & Rubber Co.; E. R. Shumen, B. F. Goodrich Rubber Co.; E. G. Schick, Goodyear Tire & Rubber Co.; R. E. McConnell, Kelly-Springfield Co., and Charles Washer, United States Tire Co.

Judge Eugene C. Bonniwell, an honorary member of the association, delivered a short talk on some of the evils that the truck men must guard against in their fight against adverse legislation. He told them to advise drivers to eliminate speeding and give more attention to courtesy on the roads, adding that in the majority of cases truck drivers did not pay any attention to passing passenger cars.

Arthur Bittong, in a comedy rebuttal on what happened during the evening's meeting, made a tremendous hit.

Steel and Rubber Markets

Steel Products Prices

Per ton—Pittsburgh—			
Billets—Bessemer	$38 50	a	40 00
Open hearth	38 50	a	40 00
Forging	45 00	a	47 00
Sheet bars	39 50	a	....
Slabs	38 50	a	40 00

Sheets

The following prices are for 100-bundle lots and over f.o.b. mill:

Blue Annealed Sheets—			
Pittsburgh	$2 60	a	2 75
Philadelphia	2 92½	a	3 07½
New York	2 94	a	3 09
Galvanized Sheets—			
Pittsburgh	4 35	a	4 50
New York	4 60	a	4 84
Tin Mill Black Plate—			
Pittsburgh	3 35	a	3 50

Finished Iron and Steel

Steel hoops & bands, Pitts.	$2 75	a	2 90
Tank plates, Pittsburgh	2 10	a	2 25
Tank plates, New York	2 44	a	2 59
Steel bars, Pittsburgh	2 10	a	2 15
Steel bars, New York	2 44	a	2 49
Iron bars, ref'd, Pittsburgh	2 75	a	....
Rails—Stand., open hearth mills	43 00	a	....
Light sections, 25 a 45 lb.	2 15	a	....

Rubber Firmer

Plantations—			
1st latex, cr., spot	34½	a	..
Feb.	34½	a	..
March	34¾	a	..
April-June	35¾	a	..
Ribbed, smk., sh., spot	34½	a	..
Feb.	34½	a	..
March	34¾	a	..
April-June	35¾	a	..
July-Dec.	37	a	..
*Brown crepe, thin, cl'n	33½	a	..
*Specky	33	a	..
Rolled	31¼	a	..
Amber—			
*No. 1	..	a	34¼
No. 2	..	a	33¾
No. 3	..	a	33½
Para—			
Up-river, fine	33	a	..
do coarse	..	a	27
*Island, fine	30	a	..
do coarse	18	a	..
Caucho Ball—			
*Upper	..	a	29
*Lower	..	a	27½
Cameta	..	a	16
*Centrals—			
Corinto	25	a	..
*Esmeraldas	25	a	..
*Mexican scrap	24	a	..

*Nominal.

*Guayule—			
Wet	..	a	..
Dry	..	a	29
Balata—			
Block, Ciudad	75	a	..
Block Colombian	60	a	..
Panama	58	a	..
Sheet	80	a	..
Massai—			
Prime	..	a	31½
*Benuela—			
No. 2	..	a	..
Kassai—			
Br. black	..	a	30½
Pr. red	..	a	25¼

Scrap Rubber

Boots and shoes	3½	a	3¾
Arctics, trimmed	2½	a	3
Arctics, untrimmed	2¼	a	2½
Inner tubes, No. 1	4¼	a	4½
Inner tubes, No. 2	3¾	a	4
Hose, steam, fire	1	a	1¼
Hose, air brake	¾	a	1
Tires, automobile, white	2	a	2¼

Federal Soon to Open 1923 Session of Its Sales School

"Know your product better" is the slogan of Federal Motor Truck Salesmen these days. The Federal Company inaugurated the Federal Sales School in 1921. Since that time, nearly one hundred salesmen have graduated from them. The 1923 schools open with the first session on February 12th, which will probably last for ten days or two weeks. About twenty-five salesmen will receive a course of lectures on the details of construction, modern engineering practice, chassis metallurgy, unit operating functions and all technical information about the trucks and materials used; all of which will be explained and charted for the students. An intensive course of study has been outlined, and an examination will be given at the close of each day's lectures. Salesmen receive in this manner a great deal of mechanical and constructive knowledge, which is a big aid in their work of merchandising motor trucks. There has been a woeful lack of sales education in the motor truck industry because it has ridden to success on the wave of demand and really has not had to be "sold." The net result of the previous courses of instruction in this school is quite apparent to Federal from the fact that in the recent Star Club Convention held in Detroit, twenty-one out of thirty-eight salesmen who were in attendance, because of their exceptional sales records, had graduated from the Federal Sales Schools, and this small group of men in the twelve months previous to their convention had sold 1100 Federal motor trucks.

Price List of Truck Pneumatic Tire Casings, With Capacities and Inflation Pressures of Larger Sizes

	30 3½	32 4	34 4	32 4½	34 4½	33 5	34 5	35 5	36x6			38x7			40x8			42x9			44 x 10		
									Price	Carrying Capacity	Inflation Pressure	Price	Carrying Capacity	Inflation Pressure	Price	Carrying Capacity	Inflation Pressure	Price	Carrying Capacity	Inflation Pressure	Price	Carrying Capacity	Inflation Pressure
Achilles Rubber & Tire Co., Binghamton, N. Y.																							
Achilles Cord, non-skid	30.00	.....	.....	.....	.....	.....	60.00	.....	83.00	2200	90	125.00	3000	100	.....	....	...	.....	....	...	.....	....	...
Acme Rubber Mfg. Co., Trenton, N. J.																							
Acme Cord, non-skid	16.00	29.00	31.00	35.00	37.00	47.00	.....	49.00	72.00	2200	90	90.00	3000	100	.....	....	...	.....	....	...	.....	....	...
Ajax Rubber Co., Inc., New York, N. Y.																							
Ajax Improved Black Tread Cord, non-skid.	14.65	29.15	30.85	37.70	39.50	46.95	48.15	49.30	78.55	2200	90	113.85	3000	100	146.65	4000	110	.....	....	...	317.25	6000	130
Amazon Rubber Co., Akron, O.																							
Amazon Cord, non-skid	15.95	29.15	30.85	37.70	39.50	46.95	.....	49.30	70.25	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Armstrong Rubber Co., Inc., Garfield, N. J.																							
Armstrong Super Size Cord n-s	17.00	33.00	35.00	43.00	45.00	53.00	57.00	56.00	86.00	....	..	120.00	....	...	160.00	....	...	.....	....	...	.....	....	...
Badger Rubber Works, Milwaukee, Wis.																							
Badger Cord	19.50	32.80	34.70	42.40	44.45	52.80	.....	55.45	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Blackstone, Div., Rep. Rub. Co., Youngstown, O.																							
Blackstone Cord, non-skid	16.50	32.80	34.70	42.40	44.45	52.80	.....	55.45	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Blekre Tire & Rubber Co., St. Paul, Minn.																							
Blekre Cord non-skid	16.25	31.15	32.95	40.30	42.25	50.15	51.45	52.70	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Braender Rubber & Tire Co., Rutherford, N. J.																							
Braender Bulldog Super n-s Cord	16.50	32.80	34.70	46.65	48.90	58.10	59.50	61.00	91.50	2200	90	132.70	3000	100	171.00	4000	110	.....	....	...	.....	....	...
Brunswick-Balke-Collender Co., Chicago, Ill.																							
Brunswick Cord, Flat Tread n-s	18.50	32.80	34.70	42.40	44.45	52.80	54.30	55.45	91.50	2200	95	127.65	3000	105	164.55	4000	115	250.00	5000	125	.....	....	...
Burdick Tire & Rubber Co., Noblesville, Ind.																							
Air Bag Cord, non-skid	39.50	58.75	62.25	67.25	70.50	80.00	.....	83.00	143.00	2200	90	184.00	3000	100	238.00	4000	110	.....	....	...	.....	....	...
Columbia Tire & Rubber Co., Mansfield, O.																							
Columbia Cord Giant	20.75	.....	.....	.....	.....	.....	62.65	64.25	91.90	2200	90	.....	....	...	178.50	4000	120	.....	....	...	.....	....	...
Combination Rubber Mfg. Co., Bloomfield, N. J.																							
Combination Viking Fabric n-s	15.65	25.20	27.05	33.70	35.90	41.35	.....	.....	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Combination Viking Cord n-s	17.80	32.05	33.95	41.45	43.45	51.65	52.95	54.25	81.85	....	..	.....	....	...	147.25	....	...	.....	....	...	.....	....	...
Dayton Rubber Mfg. Co., Dayton, Ohio																							
Thorobred Cord, non-skid	17.95	32.75	34.95	41.75	43.75	51.75	53.50	54.50	82.25	2200	90	120.10	3000	100	155.20	4000	110	.....	....	...	.....	....	...
Empire Tire & Rubber Co., Trenton, N. J.																							
Empire Cord, non-skid	16.70	32.80	34.75	42.45	44.45	52.85	.....	55.50	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Empire Heavy Duty Cord	.....	.....	.....	46.65	48.90	58.10	59.50	61.00	79.35	2000	90	119.00	2700	100	154.15	3650	110	.....	....	...	.....	....	...
Erie Tire & Rubber Co., Sandusky, O.																							
Erie Cord, non-skid	14.85	32.05	33.95	41.45	43.45	51.65	53.90	56.65	84.15	2200	90	120.00	3000	100	152.00	4000	110	.....	....	...	.....	....	...
Falls Rubber Co., Cuyahoga Falls, O.																							
Falls Evergrip Tread Cord	17.50	33.00	35.00	43.00	45.00	53.50	54.75	56.00	87.50	....	..	124.00	....	...	158.00	....	...	.....	....	...	.....	....	...
Falls Fabric Neverslip Tread	16.50	24.75	26.75	33.50	.....	.....	.....	.....	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Federal Rubber Co. of Illinois, Cudahy, Wis.																							
Federal Rugged Cord	21.45	.....	.....	49.10	51.45	61.15	62.65	64.20	83.55	2200	90	125.25	3000	100	162.25	4000	110	.....	....	...	.....	....	...
Federal Rut Guard Cord	.....	.....	.....	.....	.....	.....	.....	70.60	91.90	....	..	137.80	....	...	178.50	....	...	.....	....	...	.....	....	...
Firestone Tire & Rubber Co., Akron, O.																							
Firestone Cord, non-skid	.....	.....	.....	44.10	45.25	54.83	56.33	57.60	91.50	2200	90	127.65	3000	100	164.50	4000	110	264.40	5000	120	.....	....	...
Fisk Rubber Co., Chicopee Falls, Mass.																							
Fisk Truck Cord	20.50	.....	.....	46.65	48.90	58.10	59.50	61.00	79.35	2200	90	119.00	3000	100	154.15	4000	110	.....	....	...	.....	....	...
Gates Rubber Co., Denver, Colo.																							
Gates Cord, non-skid	14.85	32.90	34.80	42.50	44.55	57.30	59.60	61.50	82.90	2200	90	119.30	3000	100	154.50	4000	110	.....	....	...	.....	....	...
General Tire & Rubber Co., Akron, O.																							
General Cord, non-skid	.....	.....	.....	40.05	42.15	49.70	51.90	64.70	91.25	....	..	126.95	....	...	163.45	....	...	254.95	....	...	355.20	....	...
Gillette Rubber Co., Eau Claire, Wis.																							
Gillette Cord, non-skid	16.50	32.80	34.70	42.40	44.45	52.80	54.35	55.45	82.90	2200	90	116.25	3000	100	137.50	4000	110	.....	....	...	.....	....	...
Goodrich B. F. Rubber Co., Akron, O.																							
Goodrich Heavy-Duty Cord	.....	.....	.....	44.85	46.95	54.55	55.95	57.20	91.65	2200	100	127.90	3000	110	164.75	4000	120	264.00	5000	120	.....	....	...
Goodrich Silvertown Cord	15.20	32.80	34.70	42.40	44.45	52.80	.....	55.45	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Goodyear Tire & Rubber Co., Akron, O.																							
Goodyear Cord, All-Weather Tread	.....	.....	.....	.....	.....	.....	.....	.....	91.50	....	..	127.65	....	...	164.55	....	...	264.40	....	...	369.50	....	...
Goodyear Rut Proof	.....	.....	.....	.....	.....	.....	.....	.....	96.10	....	..	134.05	....	...	172.80	....	...	.....	....	...	.....	....	...
Goodyear Cross-Rib	.....	.....	.....	.....	.....	.....	.....	.....	73.20	....	..	102.10	....	...	131.65	....	...	.....	....	...	.....	....	...
Gordon Tire & Rubber Co., Canton, Ohio																							
Gordon Triangle Cord, non-skid	18.00	32.50	34.50	42.70	44.85	53.20	.....	55.85	90.00	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Grand Rapids T. & R. C., Grand Rapids, Mich.																							
Corduroy Cords, non-skid	17.50	32.80	34.70	42.40	44.45	52.80	54.20	55.45	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Hewitt Rubber Co., Buffalo, N. Y.																							
Hewitt Cord, non-skid	17.50	.....	.....	.....	.....	.....	57.00	58.00	91.00	....	..	126.90	....	...	.....	....	...	.....	....	...	.....	....	...
Howe Rubber Corp, Inc., New Brunswick, N. J.																							
Howe Ultra Cord, non-skid	.....	36.40	39.00	46.45	48.60	57.20	58.50	59.75	93.50	....	..	132.00	....	...	.....	....	...	.....	....	...	.....	....	...
India Tire & Rubber Co., Akron, O.																							
India Flat Tread Cord	16.50	36.15	38.40	48.40	50.65	59.85	.....	60.85	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
India Round Tread Cord, n-s	19.60	34.15	36.30	45.40	47.55	56.35	58.15	59.20	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Iowa Cord Tire Co., Inc., Des Moines, Ia.																							
Iowa Cord, non-skid	17.85	29.93	31.68	36.77	38.57	45.79	.....	48.02	68.21	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Iowa Fabric, non-skid	11.00	24.70	26.51	33.01	35.15	40.71	.....	43.08	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Kelly-Springfield Tire Co., New York, N. Y.																							
Kelly-Springfield Cord, Kant Slip	16.10	32.00	34.05	41.60	43.45	51.50	53.00	54.20	87.60	2200	90	122.65	3000	100	159.50	4000	110	259.00	5000	120	362.00	6000	130

Kelly-Springfield Tire Co., New York, N. Y.																						
Kelly-Springfield Cord, Kant Slip	16.10	32.00	34.05	41.60	43.45	51.50	53.00	54.20	87.60	2200	90	120.35	3000	100	155.95	4000	110	.....	....	...	.....	....	...
Kelly-Springfield Caterpillar	.....	40.70	42.80	.....	.....	.....	55.95	.....	74.35	2200	90	.....	....	...	118.80	4000	110	.....	....	...	.....	....	...
Kelly-Springfield Standard	.....	33.90	35.85	.....	.....	.....	46.95	.....	61.10	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Kenyon Co., Inc., Brooklyn, N. Y.																						
Kenyon Cord, non-skid	17.50	32.80	34.70	42.40	44.45	52.80	.....	55.45	79.50	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Kenyon Duro Cord	15.50	26.25	28.25	33.80	35.40	42.25	.....	44.25	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Keystone Tire & Rubber Co., New York, N. Y.																						
Keystone Cord, non-skid	16.50	32.80	34.70	42.40	44.45	52.80	55.75	55.45	84.30	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Kokomo Rubber Co., Kokomo, Ind.																						
Kokomo Heavy Duty Cord	16.50	32.80	34.70	42.40	44.45	52.80	.....	55.45	79.35	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Lee Tire & Rubber Co., New York, N. Y.																						
Lee P. P. Cord	.....	44.85	47.20	61.05	63.85	72.55	75.50	76.20	100.00	1970	90	150.00	2720	100	194.20	3595	110	.....	....	...	.....	....	...
McClaren Rubber Co., Charlotte, N. C.	18.75	32.50	34.50	42.80	44.85	53.20	54.85	55.95														
Autocrat Cord, non-skid									82.65	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
McGraw Tire & Rubber Co., Cleveland, Ohio	.....	29.15	30.85	37.70	39.50	46.95	.....	49.30														
McGraw Cord, n-s	12.50	21.20	22.85	.....	.....	.....	.....	.....	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
McGraw Fabric	13.50	29.15	30.85	37.70	39.50	46.95	.....	49.30	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Oxford Cord, n-s	12.50	21.20	22.85	.....	.....	.....	.....	.....	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Oxford Fabric									.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Madison Tire & Rubber Co., Inc., Buffalo, N. Y.																						
Madison Oversize Cord	19.75	35.45	38.45	46.65	48.90	58.10	.....	61.00	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Majestic Tire & Rubber Co., Indianapolis, Ind.																						
Majestic Cord, non-skid	26.35	37.65	39.85	42.55	44.70	53.00	.....	55.70	91.85	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Manhattan Tire & Rubber Co., Mansfield, O.																						
Manhattan Giant Cord	20.75	.....	.....	.....	.....	.....	62.65	64.25	91.90	2200	90	.....	....	...	178.50	4000	120	.....	....	...	.....	....	...
Marathon Tire & Rub. Co., Cuyahoga Falls, O																						
Marathon Angle Tread Cord	20.40	33.50	35.50	43.35	45.40	54.00	55.40	56.70	93.00	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Mason Tire & Rubber Co., Kent, O.																						
Mason Cord, non-skid	17.45	28.25	29.25	35.35	37.30	44.85	52.60	46.00	80.40	2200	90	110.40	3000	100	142.20	4000	110	.....	....	...	.....	....	...
Mellinger Tire & Rubber Co., Kansas City, Mo.																						
Mellinger Cord, non-skid	18.00	32.40	34.25	41.90	43.90	52.15	.....	54.35	90.90	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Michelin Tire Co., Milltown, N. J.																						
Michelin Cord, non-skid	15.50	29.15	30.85	37.70	39.50	46.95	48.15	49.30	86.00	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Mid-Continent Tire Mfg. Co., Wichita, Kans.																						
Midco Cord, Universal	22.00	38.75	41.15	45.45	47.50	56.90	.....	59.00	92.50	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Miller Rubber Co., Akron, O.																						
Miller Cord "Geared-to-the-Road"	16.45	.....	.....	39.50	41.50	49.10	50.15	51.25	78.05	....	..	113.85	....	...	146.65	....	...	236.25	....	...	330.00	....	...
Mohawk Rubber Co., Akron, O.																						
Mohawk Cord non-skid	19.85	34.50	36.50	44.65	46.80	57.00	58.00	60.00	95.00	2200	90	132.00	3000	100	166.00	4000	110	.....	....	...	.....	....	...
Murray Rubber Co., Trenton, N. J.																						
Murray Oversize Cord	15.20	32.80	34.75	42.45	44.45	52.85	.....	55.50	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Murray Heavy-Duty Cord	.....	.....	.....	46.65	48.90	58.10	59.50	61.00	79.35	2000	90	119.00	....	...	154.15	3650	110	.....	....	...	.....	....	...
Norwalk Tire & Rub. Co., Inc., Norwalk, Conn.																						
Norwalk Cord	15.20	32.80	34.70	42.40	44.45	52.80	55.95	57.20	88.00	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Norwalk Fabric	13.10	24.20	26.20	.....	.....	.....	.....	.....	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Leto Fabric cl	11.95	.....	.....	.....	.....	.....	.....	.....	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Leto Cord	14.50	.....	.....	.....	.....	.....	.....	.....	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Para Belle Tire & Rubber Co., Mansfield, O.																						
Para Belle Giant Cord	20.75	.....	.....	.....	.....	.....	62.65	64.25	91.90	2200	90	.....	....	...	178.50	4000	120	.....	....	...	.....	....	...
Pennsylvania Rubber Co., Jeanette, Pa.																						
Pennsylvania Cord, non-skid	13.65	29.25	31.05	37.70	39.55	47.00	48.50	49.30	76.45	2200	90	95.35	3000	100	134.95	4000	110	.....	....	...	.....	....	...
Perfection Tire & Rubber Co., Fort Madison, Ia.																						
Perfection Cord, non-skid	19.50	32.40	34.25	41.90	43.90	52.15	53.50	54.75	90.90	2200	90	121.50	3000	100	157.50	4000	110	.....	....	...	.....	....	...
Standard Fabrics	13.75	25.45	27.35	34.05	36.25	42.15	.....	44.75	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Powertown Tire Corp., Rochester, N. Y.																						
Powertown Cord non-skid	18.60	34.75	36.70	45.10	47.30	56.55	59.70	57.90	97.60	2200	90	118.05	3400	100	161.55	4000	110	.....	....	...	.....	....	...
Quaker City Rubber Co., Philadelphia, Pa.																						
Quaker Cord non-skid	21.00	32.80	34.70	42.40	44.45	52.80	60.00	55.45	95.60	....	..	129.90	....	...	.....	....	...	.....	....	...	.....	....	...
Racine Rubber Co., Racine, Wis.																						
Racine Multi-Mile Cord	14.65	29.15	30.85	37.70	39.55	46.95	47.40	49.25	78.55	2200	90	113.85	3000	100	146.65	4000	110	.....	....	...	.....	....	...
Republic Rubber Co., Youngstown, O.																						
Republic Eagle Cord, non-skid	16.50	32.80	34.70	42.40	44.45	52.80	56.40	55.45	87.80	2200	90	129.90	3000	110	167.30	4000	110	.....	....	...	.....	....	...
Samson Tire & Rubber Corp., Los Angeles, Calif.																						
Samson Super Size Cord, non-skid	18.90	33.90	35.85	49.40	52.60	61.50	63.80	65.70	85.00	2200	120	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Samson S. O. S. Fabric	10.65	.....	.....	.....	.....	.....	.....	.....	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Samson S. O. S. Cord	13.50	.....	.....	.....	.....	.....	.....	.....	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Selberling Rubber Co., Akron, O.																						
Selberling All-Tread	.....	36.90	.....	45.30	47.60	57.35	59.05	60.60	85.80	....	..	121.55	....	...	157.30	....	...	.....	....	...	.....	....	...
Spreckles "Savage" Tire Co., San Diego, Cal.																						
Spreckles Savage Cord	.....	31.90	34.00	42.10	43.20	51.70	52.80	54.00	81.00	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Standard Tire Co., Willoughby, O.																						
Tiger Foot, non-skid	16.95	32.80	34.70	42.40	44.45	52.00	.....	55.45	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Standard Four Tire Co., Keokuk, Iowa																						
Standard Cord, non-skid	18.90	32.50	34.50	42.70	44.85	53.20	.....	55.85	85.00	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Star Rubber Co., Inc., Akron, O.																						
Star Meteor Cord	23.15	.....	.....	40.65	46.45	48.65	57.75	58.75	60.60	....	..	94.10	....	...	131.60	....	...	.....	....	...	.....	....	...
Syracuse Rubber Co., Inc., Syracuse, N. Y.																						
Syracuse Syra Cord	17.95	32.80	34.70	42.40	44.45	52.80	54.70	55.45	88.35	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Swinehart Tire & Rubber Co., Akron, O.																						
Swinehart Cord, non-skid	.....	.....	.....	.....	.....	.....	.....	.....	82.60	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Thermoid Rubber Co., Trenton, N. J.																						
Thermoid Cord, non-skid	20.50	33.05	34.95	42.75	44.80	53.20	54.60	55.80	84.30	2200	90	117.70	3000	100	.....	....	...	.....	....	...	.....	....	...
Traveler Rub. Co. of Bethlehem, Bethlehem, Pa.																						
Traveler Cord non-skid	17.25	32.80	34.70	42.40	44.45	52.80	54.20	55.45	91.50	2200	90	132.70	....	...	171.00	....	...	.....	....	...	.....	....	...
United States Tire Co., New York, N. Y.																						
United States Cord, non-skid	.....	.....	.....	44.50	46.65	55.45	57.10	58.20	91.50	2200	90	127.40	3000	100	164.15	....	...	.....	....	...	.....	....	...
Victor Rubber Co., Springfield, Ohio.																						
Victor Cord, non-skid	19.00	34.10	36.05	41.90	43.90	52.15	53.50	54.75	82.65	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...

Facts About a Growing Field—Taxicabs

This is Just a Plain Heart-to-Heart Discussion on Taxicabs. Its History, Development, Business Ethics and Business Possibilities Will Show You That Big Business is Slipping Through Your Hands

By AN OLD-TIMER

MUCH misunderstanding is responsible for the dread dealers have for selling taxicabs on the time payment plan. Considerable prejudice is the result of a misapprehension regarding the credit risk of the taxicab operators, individuals or companies.

Too little is known about the taxicab operator of today and too much is remembered about his earlier history.

The dealer must clear his mind of the adverse opinion the unethical taxicab practices of yesterday created in the same way that the taxicab operator has purged himself of the great many habits that justifies the reputation he once bore.

The taxicab business has developed on a scientific basis to such a great extent in a comparatively short time that it deserves a place in the front ranks of the industry.

Today the taxicab industry, although representing a small portion of the transportation business of this country, is rapidly developing and is destined to become within a very short time a genuine industry which the Dealers' Fraternity can well afford to cultivate.

Shun Today and be Shunned Tomorrow

The dealer who scorns the Taxicab Brotherhood today will bid frantically for his favor tomorrow; the dealer who turns his back on the taxicab operator will gladly humble himself within a very short time and beg him for business; the dealer who is not keeping his ear to the ground and is not keeping in step with the rapid development of the taxicab situation will regret it before long.

The term, "Taxicab Brotherhood," is employed advisably. Taxicab operators are organized; they trust each other, they benefit by each others experience and act in unison in a great many features of their business.

The taxicab industry must not be judged and rated by its undesirable element any more than the automobile business should be judged by the dealers who "wallow in grease." In fact, were we to judge the Dealers' Fraternity by their undesirables, we would perhaps have to give the industry a lower classification than the taxicab industry. The organization of taxicab operators, headed by its brilliant and earnest leaders, accomplished more in three or four years than automobile dealers have in ten or twelve. They not only attempt, but solve their own problems with knowing dispatch.

They know how to figure their costs—reckon their profits—and speed up their turnover. The average taxicab operator knows more about his business at the end of every twenty-four hours than the average automobile dealer knows about his.

Street battles between competitors and the practice of overcharging are on the wane. The undesirables are gradually being weeded out. The taxicab business today is being conducted honestly on a big scale and the percentage of overcharges is nil, modern methods and equipment have helped. Besides, the caliber of the man behind the wheel of the taxicab is much higher than the driver who sat behind the whip-socket.

Raised to a More Reputable Plane

The taxicab operating companies, as well as the individual drivers working for these companies, or independently, long ago learned that they would have to live down a certain stigma on their name. They realized that a mere handful of men among their number had besmirched their history with the unsavory reputation. They strove hard, make plans to purge themselves of this reputation, and finally by fair methods, high-grade service, reasonable prices and honesty of purpose, they have today built up a reputation that most any automobile dealer can envy.

The average automobile dealer is backing away from the taxicab business in his town because he says the sales have to be made on the time-payment plan and he doesn't consider the taxicab operator a satisfactory risk.

Leeches Formerly Thrived on Taxicab Enterprise

Insurance companies have capitalized on the situation to gouge the taxicab operator. Money lenders are always alert for any excuse to charge usurious interest, or to prosecute. Practically the only encouragement the taxicab business has received is from depot terminal managements and hotel proprietors.

In spite of this, taxicab business has developed much faster in the last two years than automotive dealers have generally supposed. But few dealers are prepared to handle this new field.

In the same way that the public discovered the motor truck before the automobile dealer was really willing to see it, so will probably the taxicab business be developed into almost full maturity before the automobile dealers discover its possibilities. That same automobile dealer who is prejudiced against taxicab paper no doubt will be very glad if he can collect on all the paper he had outstanding on second hand cars or trucks.

Taking Coal From River Bed With Transport Trucks

Removing coal from the bed of the Susquehanna River is another industry that can be added to the wide and growing range of profitable operation of the motor truck. Two 5000-lb. Transport trucks are used on the job. The coal is brought up from the river bottom by suction produced by an engine in a barge. The coal is dumped in the barge and brought to shore, where it is loaded into trucks.

The dealer has always taken great chances selling cars or trucks on time and the small percentage of losses is marvelous among credit men. With very little investigation and in many cases none at all, dealers will deliver used cars in exchange for a little cash and a slip of paper called a note but very little is known of the purchaser. Nothing is to hinder the buyer from skipping the country before the note is taken up and the expense of locating him is tremendous in most cases.

Operation is for Livelihood, Not Pleasure

On the other hand the individual taxicab operator has a business and income; it's a small business but nevertheless it is a business. He drives his car for revenue instead of pleasure. He must always be where he can be found, because his business depends upon him. The record of stolen taxicabs is not worthy of reference, the incidents are so rare.

The big operator who hires his drivers is a member of the National Association and they make business of their meetings. No convention does so much good for its members as the Taxicab Convention.

A Worthy Model is Set Up

They are not only solving their own problems but are an example for the individual operator who drives and owns his own cab.

No motor vehicle was ever so well serviced by its owner as those that are owned by Association members. No owner of a fleet of motor vehicles has so well succeeded in inculcating into their drivers' minds the principles of safety.

The taxicab is not the abused piece of machinery that it was once supposed to be and the owner is not the haphazard "ne'er do well" he was once reputed to be and the driver is not the reckless, lawless ruffian that some of his vocation once gave him the reputation of being.

There is no reason why a higher interest rate or high insurance rate should be charged taxicab owners. A higher rate never made any risk less hazardous—it never made collateral more secure.

It would seem that the average taxicab operator, individual or company, is a much better risk than the average motor truck or the average used car buyer.

Taxicab is a Rapidly Growing Infant

The taxicab business is due for a big, near-future development and automobile dealers should free their minds of any contempt they may have for this business.

Taxicabs are to be sold by the thousands from now on and it will take no longer to develop it than it did the motor truck business. This business is being conducted a great deal more scientifically than your own. Get that taxicab bugaboo out of your minds.

How the Electric Truck Industry Handles the Trade-in

By C. P. SHATTUCK

ANY number of trade-in plans have been suggested in the past. Some are theoretical. Others have merit, but very little has been done to bring about better merchandising methods in the retail end of the truck industry. As long as the dealer will bid against himself for an order, and too frequently bid unwisely, just so long will the trade-in evil be with us. Some believe that it is up to the dealer to determine how much he shall lose on a trade-in. Others hold that the problem is up to the factory. All of which brings us up to an explanation of how the electric truck industry, manufacturer and dealer, views and handles the trade-in.

The writer is informed on good authority that the manufacturers of electric trucks anticipated the trade-in conditions existing in the gasoline truck field and determined that inasmuch as their success depended wholly upon their dealers making a real profit that the electric truck dealer should be shown and sold if you please, on the policy of **no trade-ins whatsoever.** In other words, it is the policy of the leading electric truck makers to sell their dealers from the start on what a trade-in means.

Used Equipment Payments Tabooed

An analysis of the dealer methods of the Ward Motor Vehicle Company and others shows that the factory-dealer policy is to tell the prospective dealer in plain language why he should not and cannot take a used car, horse, wagon, typewriter, office equipment, etc., as part payment for a new electric and expect to make a profit. It appears that it does not require any great sales ability for the sales manager of the electric truck factories to sell the prospective dealer, although in many instances the new dealer is a recruit from the ranks of the gasoline truck field.

Say No and Mean It

Boiled down to brass tacks it is the policy of the factory and the dealer to say **NO,** and say it real loud when the prospect hints, suggests or asks that his old cars, horse, wagons and harness are proffered as part payment. But, the reader will ask, can it be done? What are you going to do with a prospect who states emphatically that he will not sign on the dotted line unless he gets an allowance for that which he desires to foist upon the dealer?

The electric truck dealer has one and the same answer, **NO!** And it registers. An example will show the method of answering no. In the south is a large concern, in the baking industry, which was sold on electrics by a cost analysis and route demonstration. When the deal was about to be closed the head of the company brought up the subject of his investment in horses, wagons, harness, stable equipment, etc., hinting that the disposal was a factor in the contract. The dealer laid his cost analysis on the table in reply. He again showed the prospect what the trucks would save him in one year, in two, three, etc., and that should he, the dealer, accept the horses, etc., at his own figure, which he wouldn't, it would be considerably less than the prospect could turn the equipment over quickly. There was usual argument in which the dealer stood pat on the trade-in. And the prospect signed, advertised his horse equipment, and sold it.

The oldest electric truck dealer in Chicago, who has been in the business many years with profit, was asked by the writer if he had ever accepted any cars, etc., in trade. He replied he had but once when he bought two light capacity trucks. "But," he said, "I bought them at a ridiculously low price, made a few repairs and sold them at a real good profit. Later on I sold the same company a fleet of new trucks. I do not trade. I sell new trucks and that is the secret of my success."

Another dealer said that the electric having a long life with a minimum upkeep eliminated the possibility of the trade-in. He quoted several instances of fleets in service over a period of from seven to ten years and the low cost of renewing units from a service standpoint.

Opportunity for Greater Profits

In summing up it would appear that the electric truck industry has founded its sales methods on a sound basis insofar as the trade-in is concerned. If its dealers will not trade—as it has been said they will not—their opportunities of making a profit is much better than the dealers in the gasoline truck industry who do trade or buy unwisely. If in time the electric truck industry expands as its advocates claim it will, and competition becomes as keen as it has in the gasoline field, it may be that the trade-in will rear its head. But the electric truck makers say not for they argue that the majority of their dealers will have **formed the habit of saying no** to the prospect by the time competition gives the trade-in an opening.

Alfred Reeves Tells How the Automotive Industry Changed Conditions in America

Automotive Expansion Has Had, and Will Continue to Have, Its Reactions in General Industrial Expansion. Production Schedule for 1923 is Very Encouraging

THAT the automotive vehicle has revolutionized the living conditions of practically every citizen in this country, that scores of other industries receive benefits from motor vehicle manufacturers, and that this year should see even greater progress in the manufacture and use of individual transportation units, were statements of Alfred Reeves, general manager, National Automobile Chamber of Commerce, in his address "What the Automobile Industry Means to the Nation," recently delivered before the Transportation Club.

Mr. Reeves gave an array of facts to prove what the industry has done for labor, real estate, schools, the railroad, the farmer and those in other lines of business activity.

He called for co-operation between the railroads and the motor bus and motor truck interests with a view to having each form find its rightful place in the general scheme of transportation, doing the work for which it is best suited.

As a result of the a survey of the highway transportation field, Mr. Reeves expressed the belief that railroad men as experts on transportation, were the proper ones to manage highway transport particularly as it could be made an addition and a feeder for rail lines.

Among other things, Mr. Reeves said:

"The highway and motor vehicle has permitted bus lines to be operated that take children to more than 10,000 schools throughout the country of a much better type than the one-room school house of old. E. W. Yost, the Wayne County School Commissioner, calls attention to the new consolidated school at Grosse Isle made possible by motor buses and says there were 72 school consolidations in Michigan during 1922.

"For the farmer, the highway has been the connecting link between his farm and the market. It has permitted him to buy land for productivity irrespective of whether or not it was near the railroad. It gives him access to the nearby town and thus ends his isolation.

Ask for Laws to Stop Overloading

"The truck is daily proving its own case. It is being abused, of course, by overloading and overspeeding.

We strongly advocate laws that limit the size of trucks, the size of bodies and the loads that they can carry. We should, of course, try to build and maintain our highways so they can properly care for our rolling stock.

"This overloading evil is most pronounced among smaller trucks with their narrow tires. We should like to see the authorities not alone impose fines for overloading, but as they do in Connecticut, require that the overload be taken off the truck and placed on the road side.

Proper Distance for Truck Haul 25 to 150 Miles

"While the truck has benefited many, it may have taken some traffic from the railroad, but as it has been of the short haul character on which the railroads claim they do not make money, this has been something of a blessing.

"Railroad men are not certain of the proper distance for profitable truck haul, their opinions ranging from 25 to 150 miles. The truck will take the place of many short haul railroads.

Why Shippers Prefer to Use Trucks

"Aside from the rates, shippers seem to prefer motor truck shipments because they have full control, there is less boxing, it supplies door-to-door delivery and a regularity of delivery which helps in the operation of plants; it saves time and permits the carrying of small inventories with the resultant saving of interest charges.

"Store-door-delivery, so successful in England, is coming fast. We have the Erie and other railroads, arranging with truck lines to insure through service from the collection of the freight to its final delivery.

Railroad Men Should Manage Truck and Bus Lines

"Bus and truck lines have not all been successful, generally because of mismanagement or because of routes that furnished insufficient returns.

"All this means that the railroad men are the proper ones to take charge of truck and bus operations, making them feeders to the trolleys and steam lines.

"Thus will be assured more freight and passengers for the long haul, which would more than offset any revenue that may be lost to the short haul.

How Other Industries Profit

"Many other lines of business have profited from the activities of the automotive industry which is now represented by a salesroom, garage or filling station in every town and at almost every cross road in the country.

"We use four per cent of the iron and steel, nine per cent of the finished roll steel; twenty-two per cent of the aluminum; twelve per cent of the copper, seventeen per cent of the tin; two per cent of the lead, eighty-three per cent of the upholstery leather; forty per cent of plate glass; eighty per cent of the rubber imported and about eighty per cent of all the gasoline.

"Think how real estate values have increased as a result of motor vehicle use. Sections are occupied now that could not have been utilized for years if depending on other means of transportation.

$125,000,000 Freight Bill Paid to Railroads

"Few industries have benefited more than the railroad. They may lose some traffic now and again, but it is more than offset by new business. The four leading places in carloads of manufactured articles on the railroads are for petroleum and its products, iron and steel, automobiles and parts, and cement. All of these are due to some extent, directly or indirectly to the manufacture and use of motor cars.

"Third place in shipping last year goes to automobiles and parts, because the industry gave the railroads more than half a million carloads of automobiles, motor trucks and parts, not including tires with an estimated freight bill of $125,000,000.

2,700,000 Motor Vehicles for 1923

"A little more than 25 years ago, there were four automobiles in this country, one of them in a circus. Now we have more than 11,500,000 motor units registered, of which 10 per cent are trucks. Probably 1,800,000 of this total will have to be replaced with new vehicles this year, which makes certain that our industry will be obliged to manufacture not less than 2,700,000 motor cars and trucks in 1923."

Stage Set for Boston's Annual Trade Event

Chester I. Campbell, manager of the Boston show and his body of co-workers are anticipating the largest show in the history of the Boston Dealers' Association, when the 21st annual passenger car and truck exhibit is held at the Mechanics Building, Boston, March 10th to 17th. Although it is impossible to state at this time, the size of the entry list, is is estimated that about 40 different makes of trucks would be on exhibit and about 90 passenger car makes as well as fire apparatus and farming apparatus.

How to Develop a Modern Service System

A Service Station Operated on the Combined Flat-Rate and Piece-Work Basis is the Most Successful

This Article is a Resume of an Address and Discussion by a Prominent Detroit Dealer

AMONG the papers presented at the Chicago Service Meeting of the S. A. E., January 31, the most interesting and discussed was that on the "Development of a Modern Service System," by Don T. Hastings, vice-president of Williams & Hastings, Inc., Hupmobile distributor, of Detroit. Although an outline of the piecework as employed by this concern was given in the December issue of the COMMERCIAL CAR JOURNAL a resume of Mr. Hastings remarks should interest every dealer and service manager in the truck industry for the principles can be successfully employed.

Producers Also Responsible for Poor Service

After analyzing the reasons for poor service, Mr. Hastings said: "Producers also have been responsible for much of the poor service rendered, because they have not insisted that their distributors and dealers give the proper consideration and study to the the service problem. So long as a sales volume was maintained, they have been shortsighted and **left it to the individual dealer to decide what he should do with his service.** Even among those manufacturers who talk service in a more or less feeble way there has been a lack of proper supervision and assurance **that the average dealer must have** if he is to succeed in giving good service without a prohibitive outlay.

"Most manufacturers and dealers have failed to realize that first class service is one of the best aids to the sales department that is possible to secure. The best advertising is conceded to be the word-of-mouth advertising that a satisfied owner does among his friends and acquaintances. No matter how well satisfied a man is with the car he has purchased, while it is new, he will not remain a booster unless he is able to get satisfactory treatment when in need of adjustments or repairs to his car. The dealer cannot expect orders from the friends of an owner whose standard line of talk is to the effect that his car is fine, but that the service rendered by the dealer is poor.

"Owners are buying cars more and more on the basis of good service. The average owner would be satisfied to own any one of four or five cars that are in the same price-class, and he is almost certain to inquire about the service given on the various lines before he signs an order. The dealer who has once instituted good service in his establishment is impressed almost daily by the remarks of prospects to the effect that they were rather inclined to buy the competitor's car until some neighbor boosted the dealer's service strongly enough, to persuade them to buy one of his cars.

"Many of the factories have realized in recent years that unreasonably high priced parts were proving a handicap in the sale of the car. The result is that many of them now have such a price list that the total price of all parts or assemblies required to form a complete car equals or is less than the price of a complete new car.

"Among the steps that have been taken looking toward the ideals of service is the establishing of flat rate or guaranteed charges for labor covering the various operations required in the repair of cars. Some of these flat rate systems have been developed by individual dealers, and others have been prepared by the factories and transmitted to their dealers.

"Our early analysis of the service problem had convinced us that, ultimately we could install a flat-rate system of charges for the customer, and that we would also install a piecework system in the shop. We decided further that our flat-rate charges to the customer should in the majority of cases, cover labor only, as any system that attempted to include the cost of parts, lubricants, and the like, as well as labor, could be only an estimate system, instead of a definite statement of costs. The advantages of this flat-rate and piecework system were summarized briefly as follows:

Advantages for the Owner

1. He is advised in advance regarding cost of job, so far as labor is concerned.
2. The cost of the work to him is reduced.
3. He gets the car sooner, because it reduces the length of time required to do the work.
4. It eliminates any misunderstandings as to the charges, in advance, since the charges are fixed.

Advantages for the Dealer

5. The cost of performing the work is reduced.
6. The tendency is to make the mechanic more careful; for, if his work is judged unsatisfactorily by the foreman and the inspector, he must do the work over at his own expense.
7. More floor space is created, because the work is performed faster.
8. The number of workmen in the shop is lessened.
9. More jobs are put through the shop in a given time.
10. Disputes over customers' bills are eliminated.
11. Eliminates incompetent workmen.
12. Loafing is done away with.
13. New cars are prepared for delivery in less time and at a standardized rate.

Advantages for the Mechanic

14. His hourly rate while working is increased.
15. It increases his monthly earnings.
16. His straight time work is speeded up, so that he can get back on contract.
17. The mechanics dislike for certain jobs is eliminated.
18. It creates in him an inventive genius, and he designs tools to help him accomplish the work in a shorter time.

"We realized to install such a system on a logical basis required, fundamentally, a knowledge of the various operations required in handling repair work, and also of the average time required for each one of these operations. An analysis was made of the repair operations, and they were divided into 25 groups, each group consisting of a number of operations on a particular unit in the car or covering a certain class of work. The total number of operations listed, including those covering the installation of accessories, was about 400. As soon as this list was prepared, two lines of work developed; the systematic recording of time and a method of making the operations specific.

"It was necessary that the service salesman write the instructions for each repair job in such a way as to segregate the operations required in accordance with this new list. As the time records accummulated, they were posted to individual sheets for the various operations. These summary sheets were checked over by the shop foreman and myself. Any time records that were obviously too high or too low were rejected, and the average time on each operation determined. **In the majority of cases, at least 10 valid reports were used to determine the average;** in some cases, the number was more than 100.

"It was decided to write up the detailed procedure required on each operation so as to make definite the work required by each operation, outline the best procedure to accomplish the work, inform all mechanics of any short cuts developed by anyone in the organization, enable a good mechanic not familiar with this particular car to adapt himself quickly to our particular methods, avoid the chance of having work ordered by an owner not being completely finished, prevent arguments with mechanics in case their work were incomplete or improperly done, because they must in such case complete it or do it again on their own time.

"The working set of these blue prints for use in the shop was mounted on steel

plates, the prints being covered with shellac to preserve them indefinitely. These mounted prints are drawn out on tool checks as required by the workman. The group number and name are stated at the top of the sheet, followed by the operation number and the name of the operation. The operation number is also placed in the upper right hand corner. The detail operations, with the necessary notes, are written in as definite terms as possible. A space is provided for a list of the special tools required and another space for a list of the parts most commonly used. Neither the tools nor the parts are filled in on this sheet. Attached is a note, 'Report to the foreman any additional work required.' Especial emphasis is laid on this in the shop, as points requiring attention frequently come to the workman's notice, although no mention has been made of them by the owner. When such work is advisable, effort is made to get in touch with the owner and secure his authorization for the extra work.

Record of Actual Time Required

"When a man starts on an operation, he reports the repair job order number and operation number to the time clerk, who makes the necessary entries on the slip. When the man completes this operation he again reports to the time clerk, who stamps the previous operation completed and rings the man in on the next operation. The time clerk computes the elapsed time for the completed operation and notes it in the time slip.

"In the case of a contract labor operation, he inserts the amount to be paid the man in the column headed 'operation price.' If the particular operation is one based on straight time, he multiplies the elapsed time by the workman's straight time rate and inserts the figure under the heading, 'straight time hours.' As each operation is completed, copies (a special quadruplicate form is used) are sent to the accountant, who enters the charge on the repair job order, and to the shop foreman or service manager, who thus follows the progress of the work. This enables the service manager to check quickly any time taken on a flat-rate operation that varies greatly from the established average. Investigation is made of such cases to ascertain the causes. The third copy goes to the payroll clerk who tabulates daily the amount due each man. The fourth goes to the mechanic so he can check up the amount due him in case anything is wrong.

Cases of Straight Time Work

"In event of some condition arising over which the mechanic has no control, whereby a job cannot be completed in the allotted time, it is up to the foreman or service manager to make a thorough investigation; and, if he deems it advisable, the mechanic can be transferred to straight time for the particular job. When a mechanic is working on straight time, he is paid his hourly rate recorded on the pay-roll. Not all mechanics receive the same hourly rate, but, when doing contract work, they all receive the same amount of money for the same job.

"All operations on which a contract has been made and a price allowed for doing the work are posted in the shop; so, when a mechanic is assigned to a particular job he can tell instantly exactly how much money he will receive for the work by referring to the bulletin board. On the same board are also listed, in red, the jobs on which a minimum time has been established, and the mechanic must not perform the work in less time than this, because experience has proved that to do so only means slighting of the work and the possibility of having to do it again. There are few of these jobs.

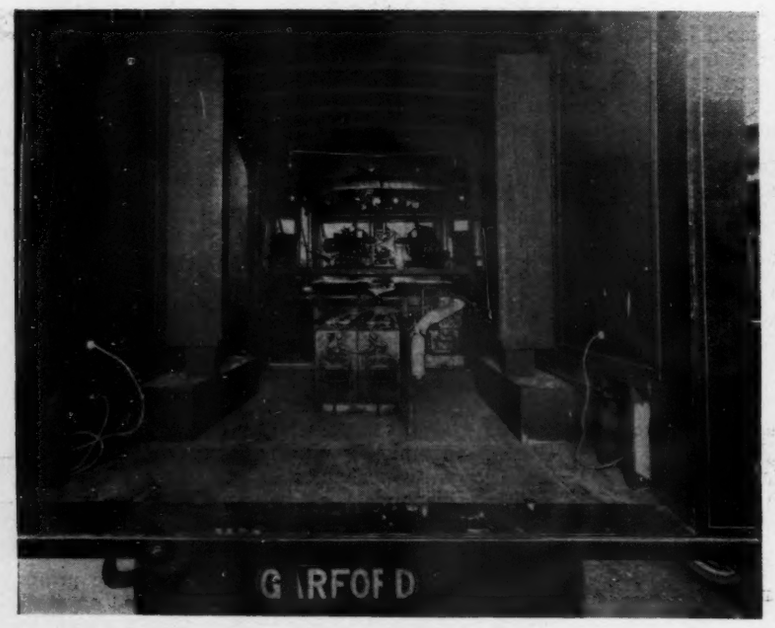
"At this point it is well to note that, with the exception of the minimum time mentioned, the workman views the various operations strictly from a dollars and cents point of view. He knows from the lists how much money he is to be paid for each operation and proceeds to earn that money with as little delay as possible. The actual time for each operation is not listed in the shop, nor is it discussed with the men. The master list is filed in the service manager's office.

"About once a month the average time for each operation is checked up. If the time has changed materially from that on which the contract rate is based, the service manager and the statistican discuss the situation with me and a decision regarding changes is made in the contract price to the customer and also in the piecework rate to the mechanic. If it is found that the work can be performed in much less time than that on which the contract rate is based, it is to the advantage of the house to reduce prices, although we bear in mind that it is unwise to cut the mechanic's time so low that he cannot earn more money doing contract work than he can at his established day rate. He must have the incentive to do good work in the proper time, and this can only consist of increased earnings.

Korax Company Announces Its Products

The Korax Co., a selling corporation at 56 W. 45th St., New York City, announces that hereafter it will handle the following products: G. Piel muffler cut-out, testing valve and pedal, manufactured by the G. Piel Co., Long Island City; National lock washers, manufactured by the National Lock Washer Co., of Newark; Gredag, manufactured by the Acheson Graphite Co., of Niagara Falls, Kwik-Ak-Shun compounds, manufactured by the United States Products Co., of Pittsburgh, and Jones electric drill by Jones Drill & Specialty Corp.

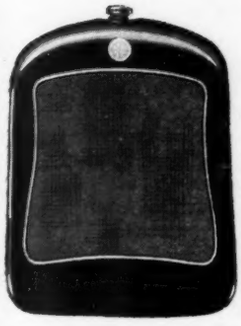
William George Bryan, of Sydney, Australia, desires to secure the agency for a line of motor trucks and automotive accessories, payment to be made against documents. Mr. Bryan may be reached at the Prince George Hotel, 28th St. and 5th Ave., New York, N. Y.



Showing the Interior and a Side Panel or Screen View of the Garford Motion Picture Show Conducted by the Industrial Display

The Industrial Display, Inc., of New York and Boston have succeeded in adapting motion picture advertising to the outdoors by means of a truck and a specially designed apparatus which shows the films in three places at the same time on the sides and rear of the truck. The truck adopted for this service was the Model 725 Garford, a 168-in. wheelbase job.

Go-Getter Is Right!



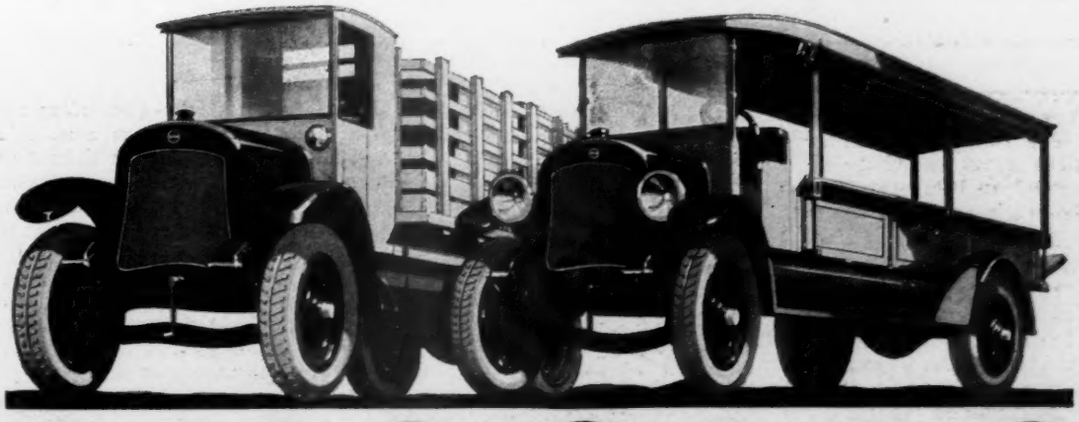
Chicago proved it.

Dealers and business men crowded the Hotel Sherman, Chicago, during the second annual Ruggles Truck Show.

New franchises were granted, new territory opened for 1923. Business men were sold on the strength, appearance and solid worth of Ruggles Go-Getter Trucks.

You will find a prosperous future in a Ruggles dealership. The price, the quality, the sound and vigorous factory organization give you the selling support that means success. Write or wire us for the Go-Getter franchise offer.

RUGGLES MOTOR TRUCK COMPANY, Saginaw, Michigan
Canadian Factory: Ruggles Motor Truck Company, Ltd., London, Ont.



RUGGLES

The World's Greatest Truck Value

THIS SYMBOL IN ANY ADVERTISEMENT MEANS: SEE "CHILTON AUTOMOBILE DIRECTORY" FOR COMPLETE BUYING INFORMATION

NEW COMMERCIAL CARS

Sanford Greyhound, a New Six for Quick Delivery

THE Sanford Greyhound, recently announced by the Sanford Motor Truck Co., Syracuse, N. Y., was designed to fill a distinct need in the heavy-duty, speed-truck field. It is 1½ ton, six-cylinder job and is known as the Model W-10. This model is especially suitable for bus service, wholesale and retail trade, department stores, florists, grocers, fruit dealers, manufacturers, or wherever rapid delivery is required.

Only standard units compose its assembly and these are balanced and dispositioned according to the best engineering practices in motor truck designing. One of the primary requisites of a speed truck is complete and flexible control of congested traffic. This ability is claimed to be one of the characteristics of the Greyhound.

The chassis price of the Model W-10 complete in paint with vestibule cab, electric lights and starter, non-glare lens, tool equipment, one extra demountable rim, speedometer, oil gage, ammeter, dash light, electric horn, jack and hand pump is $1795 f.o.b. Syracuse.

This company also furnishes special tops and bodies to suit the requirements of any line of trade. The bodies are offered in the following types: Express; stake; rack section; covered express; express with covered tops in plain or woven wire grille sides with storm curtains, panel top, ambulances, hearses and bus bodies.

The six-cylinder engine is a Continental, Model 8-R and is capable of developing 55½ hp. at 2300 r.p.m. The bore and stroke is 3⅜ in. x 4½ in., respectively. Briefly it is suspended from three points, has a four-bearing crankshaft, pressure oiling system and water pump circulation. A Zenith carburetor is used. Ignition is by a six-volt, two-unit, single wiring system. The starting system is equipped with Bendix drive. The cooling system includes a radiator having a specially designed one-piece nickel-silver shell. Honeycomb core.

Three speeds forward and one reverse are provided by the selective transmission, which is mounted in unit with the clutch and engine. The clutch is of the single-plate, dry-disk type and easily adjustable. Speeds: First, 4.09:1; second, 1.69:1; third, 1:1; and reverse, 5:1.

Final drive is through a three-quarter floating, spiral-bevel rear-axle. The differential of this axle is mounted on taper roller bearing, and the wheels on double row ball bearings. The rear axle ratio is 5.75:1. Total reduction in low gear, 23.5:1. The front axle is drop-forged steel of I-beam section, 2½ in. x 1⅝ in. Front wheels are mounted on taper roller bearings. The propeller shaft, which is of Spicer make, is of two-piece, three-joint type with center bearing support.

Steering is through a Gemmer gear, which is of the full wheel and worm type, semi-irreversible. Ball and socket type drag link. Internal spark plug and gas controls are provided on the 18 in. handwheel.

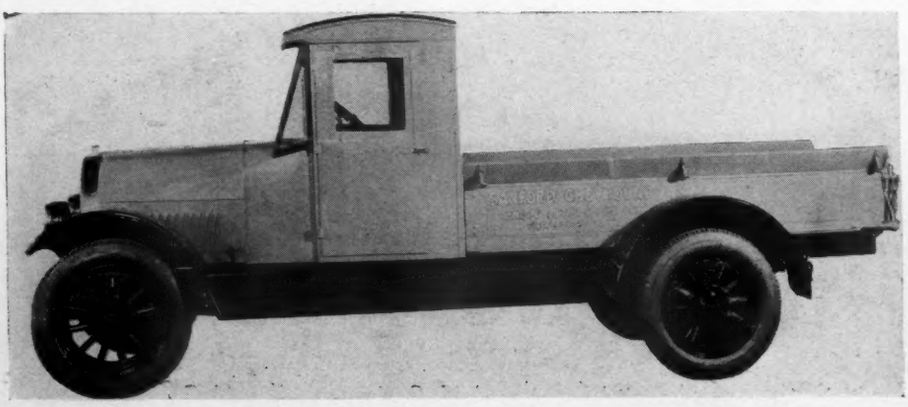
The special heat-treated, pressed-steel, semi-flexible frame, of 5½ x 2 x 3/16-in. section, is supported on four semi-elliptic springs. The springs are of alloy and are all bronze bushed. Chassis lubrication is provided by a Bowen Empress high-pressure system. Pneumatics, 33 x 5 truck cords are used on all four wheels. The tread is 56 in.; wheelbase, 140 in.; and distance back of cab to end of frame, 105 in.

Schacht Announces New Light Speed Job

THE one and a half-ton chassis recently announced by the G. A. Schacht Motor Truck Co., Cincinnati, O., is a light addition to the heavier Schacht models which includes the well-known Ten-Speed job. This new truck embodies all the features of modern commercial car construction, such as powerful overhead valve engine, disk-clutch, four-speed transmission, and double reduction rear axle. It is designed especially for the light delivery field, providing, according to the manufacturers, strength, speed, endurance and economy in operation.

Every unit, it is stated, is oversize, to insure long life and reduction of repairs. Special attention has been given to the matter of accessibility, so that any adjustments or repairs can be made in the least possible time.

The 4-cylinder engine, which is suspended from three points, is of the removable head type and has a bore and stroke of 4 and 5 in., respectively. It has an S. A. E. rating of 25.6 hp. and is capable of developing 50 hp. at 2000 r.p.m. Lubrication is force feed to all main and connecting rod bearings. An oil lead is provided from the oil header to the hollow rocker lever pins to insure proper lubrication of rocker arms. The cooling system includes a centrifugal water pump



New Sanford Greyhound, a Six-Cylinder Speed Truck

Built of *rolled* steel-and why

SOME truck wheels are built for exceptional strength, others for light weight or resiliency. The Bethlehem Wheel possesses all three of these qualities. It combines great strength *and* light weight *and* resiliency—because it is made of *rolled* steel. Gruelling tests, both on the road and in the laboratory, have repeatedly demonstrated the all-round capability of the Bethlehem Wheel. Those tests, confirmed by the good results the Bethlehem Wheel is giving in every-day service, establish beyond question the superiority of the rolled steel construction of the Bethlehem Wheel.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Sales Offices:
New York Baltimore Atlanta Boston Philadelphia Cleveland Buffalo
Washington Pittsburgh St. Louis Detroit Chicago San Francisco

BETHLEHEM
ROLLED STEEL TRUCK WHEELS

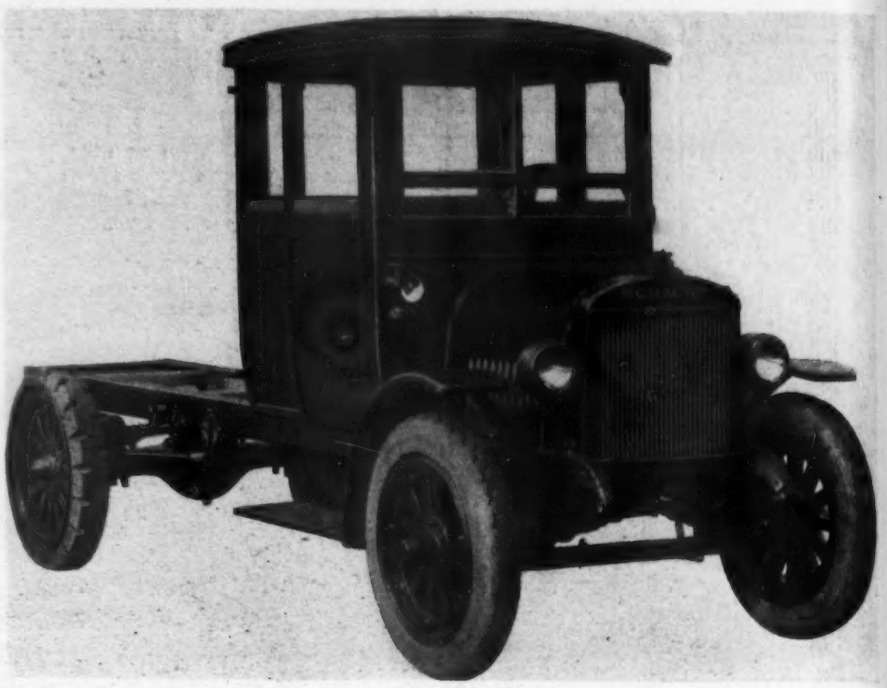
THIS SYMBOL IN ANY ADVERTISEMENT MEANS: SEE "CHILTON AUTOMOBILE DIRECTORY" FOR COMPLETE BUYING INFORMATION

and a cast tank type radiator with vertical copper tubes. The cores are removable. Ignition is provided by a waterproof high-tension magneto. Fuel is fed by vacuum from a heavy 20 gal. steel tank mounted in the seat to a 1¼-in. Zenith carburetor. It is controlled by either hand lever on the steering wheel or by a foot accelerator.

Both the clutch and transmission are mounted in unit with the engine. The clutch is of the multiple disk, dry plate type, fully enclosed and the transmission is of the selective gear type providing four speeds forward and one reverse. All gears are nickel steel and shafts of chrome nickel. Large annular bearings are used throughout.

Power is transmitted to the double-reduction through a two-piece propeller shaft equipped with three universals. The center joint is supported on an SKF self-aligning ball bearing. The rear axle is mounted in a one-piece steel housing and is provided with two braking systems; service and emergency. Both are on the rear wheels. Gear ratios are: 1st, 33.6:1; 2nd, 21:1; 3rd, 11.2:1; 4th, 7:1; and reverse, 45.5:1. The front axle is a conventional drop forging of I-beam section. A ball-jointed steering rod is in back of this axle.

The heavy pressed steel frame, 3 in. wide, 6 in. deep, and ¼ in. thick, is supported by four semi-elliptic springs of ample proportions. Drive is taken through heavy, flexible ball jointed radius rods. A steering gear of the cam and lever type provides exceptionally easy steering and includes an 18-inch notched hand wheel.



Latest Addition to the Schacht Line of Commercial Cars. It is a One and a Half Ton Speed Job

The wheels are of the heavy wood artillery type equipped with 36 x 3½-in. single tires in front, and 36 x 7-in. rear. Pneumatics are furnished as extra if desired. This job is provided in two wheelbases: Standard, 144 in., suitable for a 10-ft. body and Long, 164 in., for a 12-ft. body. The tread front is 59 in., rear, 57¾ in.

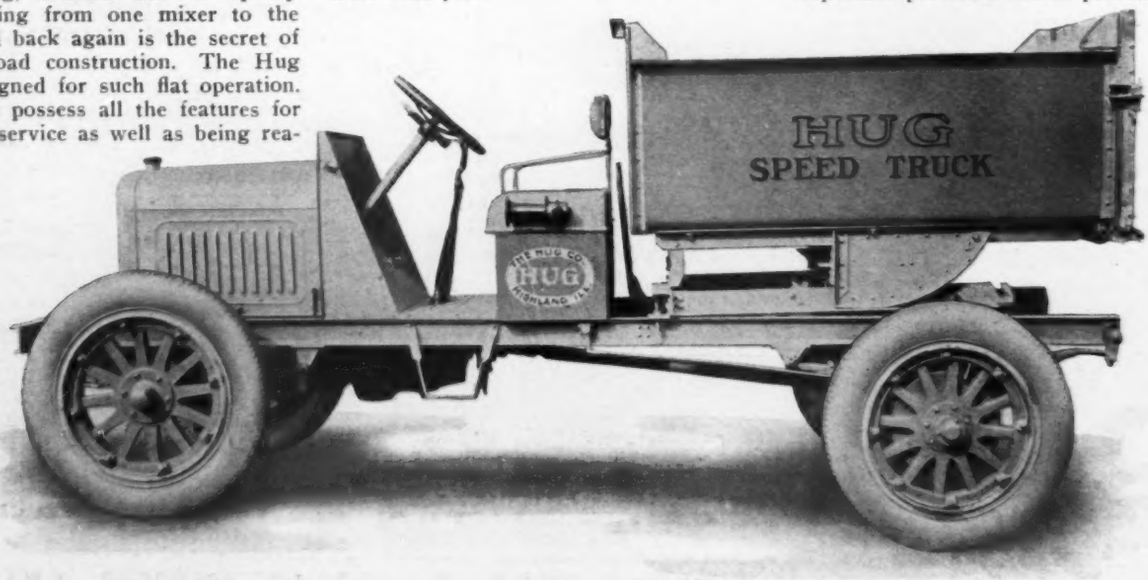
Standard equipment includes open seat, 2 cushions, 2 side and 1 tail oil-burning lamp, horn, jack and necessary tools. Extra equipment includes electric lights, generator and starter.

Hug Speed Truck for Highway Contractors

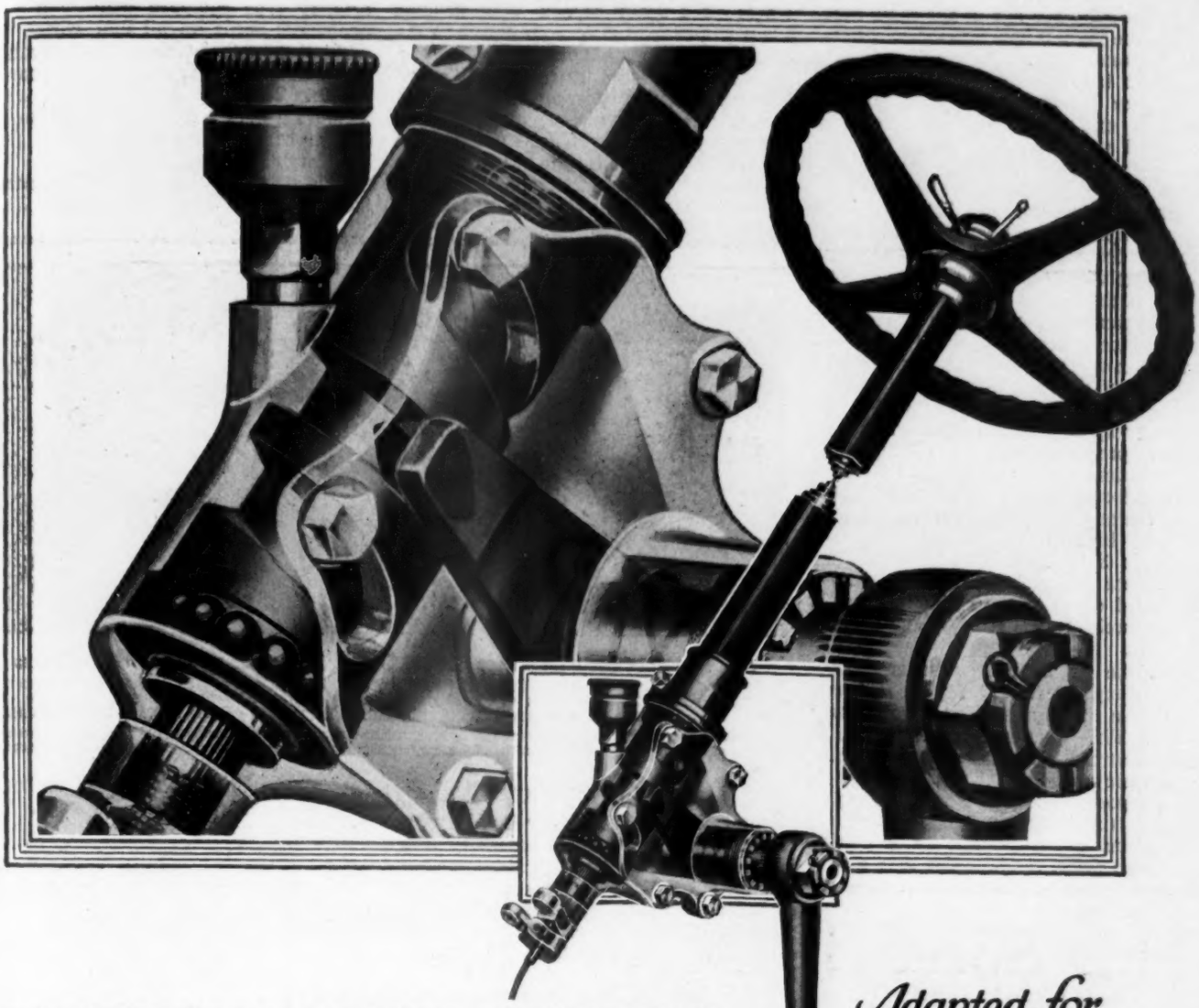
ACCORDING to C. J. Hug, the designer of the Hug Speed Truck, an experienced road builder, a fast-moving, endless belt of speedy trucks hurrying from one mixer to the road job and back again is the secret of success in road construction. The Hug truck is designed for such flat operation. It is said to possess all the features for this type of service as well as being reasonable in price. It has a maximum road speed of 45 m.p.h., and is stated to average 20 m.p.h. for a day's run on a concrete road job.

To obtain speed and pulling power in the right proportion for the Road Builder, a high gear ratio was provided in the rear axle with a comparatively low ratio in the transmission. This arrangement gives strong pulling power on low and fast road speed on high.

Another feature incorporated in this 2-ton job which is a direct result of the experience of a road contractor, is an important provision which prevents dam-



This New Hug Unit Was Built Especially to Meet the Requirements of Road Contractors



THIS NEW ROSS CAM AND LEVER STEERING GEAR is absolutely new and radically different in principal and design, establishing a new standard of steering gear efficiency.

SMALL—SIMPLE—but POWERFUL—surprisingly small and wonderfully simple, yet the long lever arm inside the gear provides even greater power and efficiency than the famous Ross screw and nut design.

ACCELERATED ACTION—QUICK TURNS—unique accelerated action in operation facilitates quick handling in making turns and in swinging back into flat-to-the-curb parking position.

EASY STEERING—HOLDS THE ROAD—it is so irreversible that in mid-position practically all road shock is eliminated, due to the slow ratio of the steering gear in mid-position. The long lever arm provides the easiest kind of steering under all conditions and the car holds the road with the least effort on the part of the driver.

Every manufacturer owes it to himself and his trade to investigate this new gear—to see for himself just what it will do. Write us for any further information desired.

ROSS GEAR & TOOL COMPANY
760 Heath St. Lafayette, Indiana, U.S.A.

Adapted for
Passenger Cars
Motor Trucks
Motor Buses
Fire Trucks
and
Tractors

The actuating cam is similar to a single thread screw of variable pitch. When the cam is turned, the diamond stud projection on the inner side of the lever moves up or down, rotating trunnion shaft and steering arm. In mid-position, the motion is slight, but as the pitch increases, the motion increases constantly and rapidly toward either extreme.

ROSS STEERING GEARS

THE STEERING GEARS THAT PREDOMINATE ON MOTOR TRUCKS

THIS SYMBOL IN ANY ADVERTISEMENT MEANS: SEE "CHILTON AUTOMOBILE DIRECTORY" FOR COMPLETE BUYING INFORMATION

age to the subgrade and at the same time permits the highest hauling efficiency possible for road work. The truck is heavy enough to haul a one-yard batch of wet concrete or one and a half yards of dry aggregate, and yet light enough to obtain the speed required. The design of the chassis is also such as to permit the loaded gravity dump body to be carried far enough forward to distribute the weight properly on all four wheels. The specially designed rear springs, provide easy riding when the empty truck is traveling at high speeds.

The power plant, which is a 4-cylinder, cast in block, detachable head Buda is mounted in unit with the clutch and transmission and is suspended from three points. The bore and stroke is 3¾ x 5⅛ in., respectively. Lubrication is by full force pressure feed. The cooling system includes a cellular Perfex radiator, spring and cushion mounted, a 16-in. belt-driven fan and a centrifugal pump. Ignition is by high-tension magneto and carburetion a Zenith, equipped with an adjustable hot air intake and choke valve. Fuel is fed direct to the carburetor from a 15-gal. welded steel tank by the action of gravity.

From the engine the power is transmitted through a multiple, dry-disk Fuller clutch to a selective sliding gear transmission. The gear-set provides three speeds forward and one reverse. Ball bearings are used throughout. From this point the power is further carried through a 10-gage tubular shaft equipped with a Blood Bros. universal joint to a Clark spiral bevel drive, semi-floating rear axle. The total reduction ratio from engine to drive wheels on direct drive is 5.5:1. The front axle is of Columbia make and is of the conventional I-beam section. It is of drop-forged steel. Both service and emergency brakes are provided; service on the exterior facing of the drums and the emergency on the drive shaft.

The special designed and well-braced frame of I-beam section with channel bumper is supported by four chrome vanadium steel, semi-elliptic springs. The chassis is lubricated by the Alemite gun pressure system. Steering is through a Ross screw and nut type steering gear equipped with an 18-in. hand wheel upon which both the throttle and spark controls are mounted. Foot accelerator.

The wheels are of the standard wood artillery type equipped with 34 x 5 in. pneumatic cords on all four wheels and with demountable rims. The tread is 56 in. front and rear and the wheelbase is 118 in. The price of the chassis which includes a durable pressed steel dash, exclusive of the war tax, is $1350 f.o.b. Highland, Ill.

This new road-building unit is manufactured by the Hug Co., Highland, Ill.

An Elaborate Installation for School Use and Equipment of the Better Class

This new 50-passenger Atterbury bus, has just been placed in service at Coraopolis, Pa. It has seats along both sides and in the center of the aisle. The body was built by the McKay Carriage Co. The windows are dropped in the side panels and held by anti-rattling stops. Dome lights provide illumination.

New Ohmer Fare Box

The Ohmer Fare Register Co., Dayton, O., has just placed upon the market a new fare box designed especially for motor bus service. This box is very simple and compact in design and will undoubtedly meet the requirements of motor bus owners who desire a rugged, serviceable fare box at a low price.

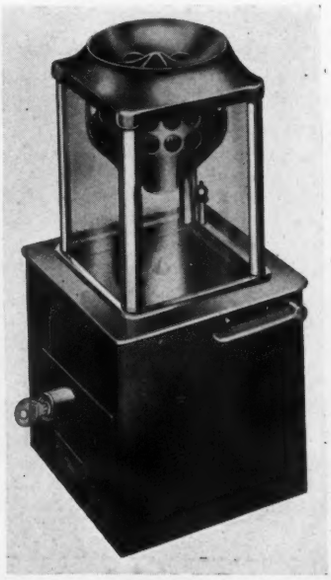
It measures 12½ in. high, 6 in. wide and 6 in. long, and weighs 10 lb. The few parts used in its construction are of great strength and durability. The glass, for example, is 3/16-in. plate glass, packed in such a way as to prevent breakage. The hopper is of special patented design.

This fare box, known as Model No. 101-A, is the first device manufactured by the Ohmer Fare Register Co., especially for the motor bus industry. It will be followed by other types of fare boxes, as well as a complete series of indicating and recording fare registers made in such sizes and shapes as to be especially well adapted to motor bus service.

The Ohmer Fare Register Co. manufactures the Recording Fare Registers which are in general use by electric railways and the Ohmer Receipt-Issuing Taximeters which have been adopted by practically all of the larger taxicab companies.

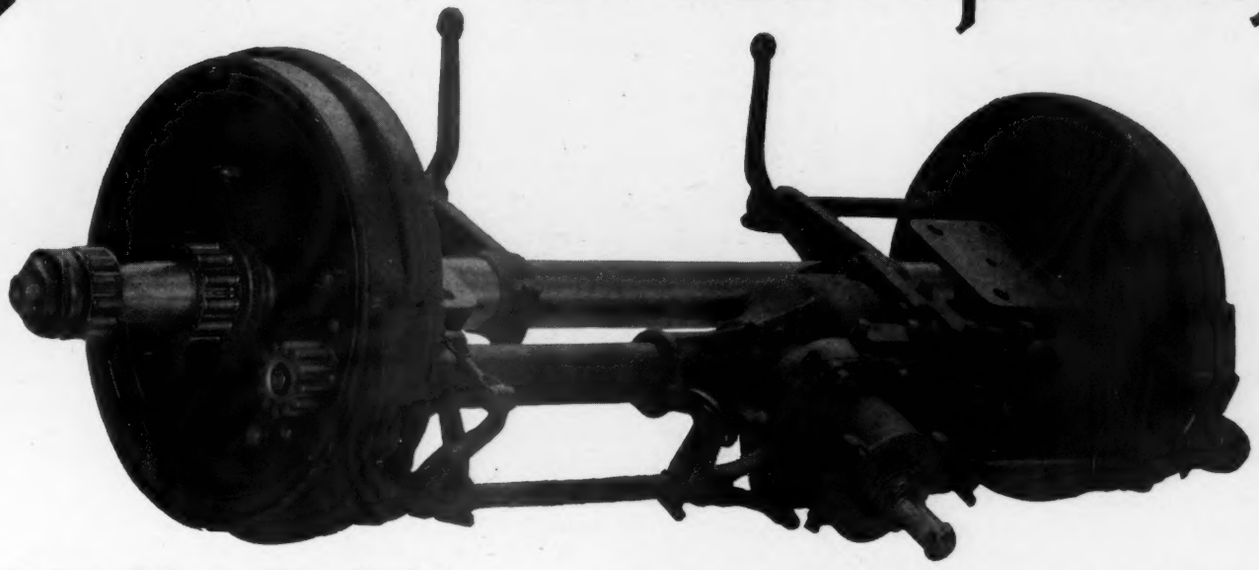
Right Front Side of the New De Luxe Style Motor Bus Offered by the Plymouth Wagon Works, Plymouth, Ind.

The body was designed with a view of maintaining attractive lines and providing full passenger comfort. It is fully equipped with dome lights, buzzer system, signal lights, front and rear lights, step lights and is finished and lettered in gold leaf. The price with war tax, mounting or crating charges paid is $2250. Dimensions: Length, 15 ft. 5 in.; width, 6 ft. 6 in.; height, inside, 6 ft. 1 in.; seat width, 32 in.; aisle width, 14 in.; seating capacity, 21; and maximum weight, 2900 lb.



Ohmer Fare Box Especially for Bus Service

Four Reasons *for* Russel Axle Supremacy



Dealers: Rely on Your Nearby Russel Axle Service Station for Parts and Service

Harry P. Anderson Co., 5948 Second Blvd., Detroit, Mich.

Sub-Dealers

Truck Service and Storage Co., 6th and Chippewa, Flint, Mich.
Gaines Motor Sales Co., Wichita Falls, Texas
E. A. Jenkins, Columbia, S. C.
J. G. Foster, 219 Tuscola St., Saginaw, Mich.

Buda Engine Service Co., 3923 Washington Ave., St. Louis, Mo.
Buda Engine Parts Co., 1055 B'way, Denver, Colo.
Iowa Motor Truck Co., Ottumwa, Iowa

Sub-Station

Auto Parts Supply Co., 1518 Grand Ave., Kansas City, Mo.

Sanders Truck Co., 12th and McGavock Sts., Nashville, Tenn.
Oregon Parts Co., 6th and Flanders Sts., Portland, Oregon
Hayes-Anderson Co., Vancouver, B. C.
Lambert Garage, 1416 S. Los Angeles St., Los Angeles, Cal.
Motive Parts Co., 136 West 55th St., New York

Sub-Stations

Unit Parts Co., 601 Newberry St., Boston
W. B. Bearing Co., 452 N. Broad St., Newark, N. J.

Swain-Hickman Co., 2116 Market St., Philadelphia
Swain-Hickman Co., Harrisburg
Motive Parts Co. of America, 2311 Indiana Ave., Chicago

Sub-Dealers

Motive Parts Co. of America, 506 N. Delaware, Indianapolis
Motive Parts Co. of America, 1902 East 13th St., Cleveland, Ohio
Motive Parts Co., of America, 116 E. Spring St., Columbus, Ohio

---

Motive Parts Co. of Penna., 235 N. Sheridan Ave., Pittsburgh
Motor Service Corp., Monte 483, Havana, Cuba

1. The Russel spiral bevel drive. Quieter in operation than straight-tooth make. Stronger. Gives more tooth contact. *Eliminates teeth breakage.*
2. Chrome-nickel steel load-carrying axle. One-piece construction. Turned from bar stock. Then heat treated. *Made super-strong at points where needed.*
3. Wheel gears positively dust-proof. Jackshaft pinion easily removed without disturbing jackshaft. Extra large wheel bearing readily adjusted.
4. The Russel Axle transmits 92% power to rear wheels—*at all speeds.*

Make it easier for your dealers to sell your truck. Equip it with the efficient Russel that materially lowers operating costs. *Write for specifications.*

RUSSEL MOTOR AXLE COMPANY
Division of McCord Mfg. Company
DETROIT, MICH.

INTERNAL AND BEVEL DRIVE
Russel Truck Axles

THIS SYMBOL IN ANY ADVERTISEMENT MEANS: SEE "CHILTON AUTOMOBILE DIRECTORY" FOR COMPLETE BUYING INFORMATION

TRUCK EQUIPMENT AND APPLIANCES

W-S-M Engine for Truck and Tractor Service

AMONG the exhibits seen at the Good Roads Show at Chicago was the W-S-M engine for trucks, tractors and industrial purposes. The engineers of the Wellman-Seaver-Morgan Co., Cleveland, O., in designing this engine, kept several very important considerations prominently in mind. The engine is built as low in weight as is consistent with its design. The load factor was also given prime consideration in the designing.

The W-S-M engine is a 4-cylinder job, 4¾ in. x 6 in., developing from 30 hp. at 600 r.p.m. to 60 hp. at 1400 r.p.m. The entire engine is lubricated under a pressure of from 10 to 15 lb. regardless of its revolutions. One noteworthy feature, which is also a departure from general practice, is that no chains or belts are used. All parts are driven by large helical gears operating in oil. The fan, for example, is driven by gear, eliminating the ever-occurring fan belt trouble. A very important feature lies in the cylinder liners. These liners may be removed or replaced without taking the engine from the chassis. These liners or sleeves, are all of standard dimensions, thus eliminating the practice of carrying oversize pistons and rings. The cost of replacement is thereby reduced.

An intake manifold of special design with a hot spot at the throat combined with overhead valves and machined combustion spaces produces high efficiency with practically no carbon.

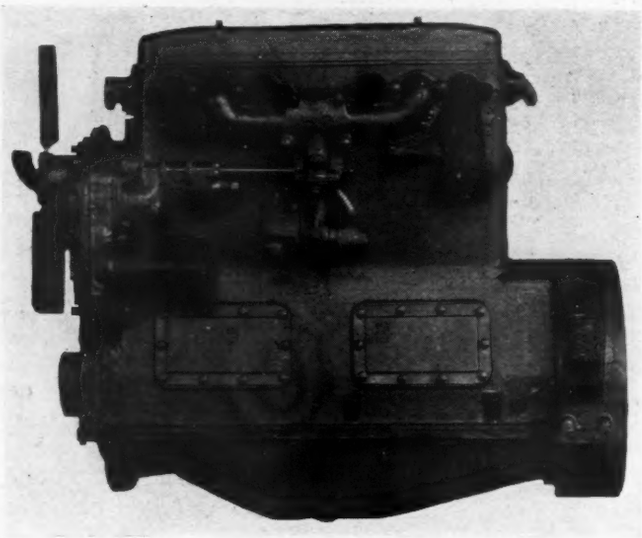
The connecting rods and pistons can be replaced from either the top or bottom of the engine. The cylinder head is removable. Hand hole plates on each side of the engine permit ready access for inspection or adjustment. The oil pan can be removed without injuring the gaskets. The governor is especially built by this company for this engine. It is entirely enclosed and operates in a continual bath of oil.

The oil pump, of the gear type and driven by the gear train at the front of the engine, is immersed in the oil sump. A bayonet type of oil gage shows the oil height at all times. The oil, after leaving the pump, passes through the various channels, which are cored and drilled in the parts. It passes from the crank to the main bearings, thence through the crankshaft to the crank pins and through the oil tubes on the connecting rods to the wrist pins. The camshaft bearings are lubricated under pressure and the oil then passes to the timing gears through a groove. Not a single fitting or screwed joint is used in the oiling system. The fuel consumption of the W-S-M engine is guaranteed not to exceed .85 pt. per hp.-hr. on gasoline.

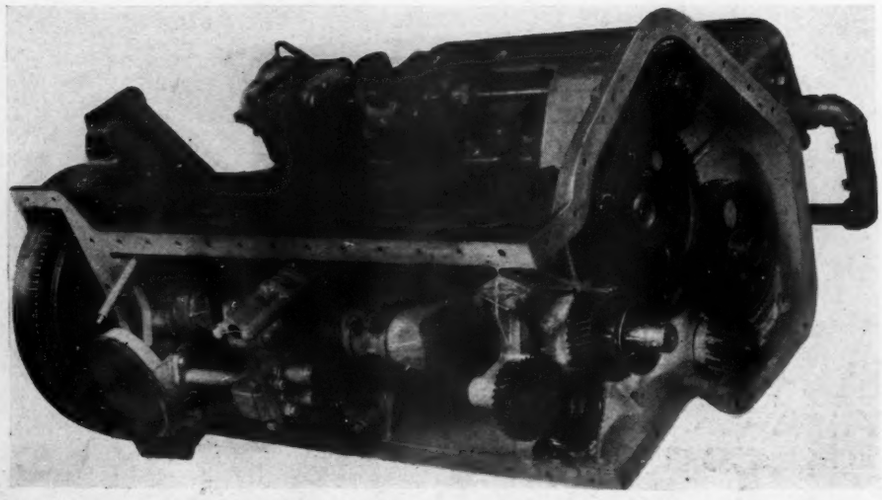
The water pump is located on the left side of the engine, looking at the gear end. It is driven from the magneto shaft. It is furnished in the centrifugal type only except when ordered.

The maker desired particularly to point out that the crankshaft, made of chrome-nickel steel, has a Brinnell hardness of from 300 to 310, and a scleroscope hardness of from 45 to 50.

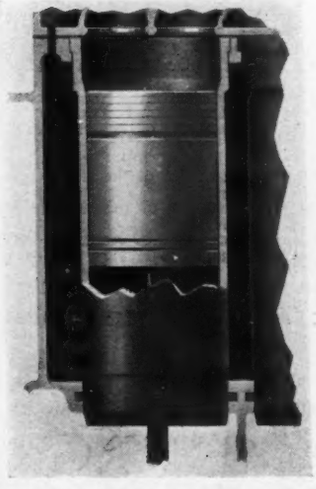
This engine, completely equipped, includes a unit power plant with governor and stub shaft; high tension magneto with impulse starter; electric starting motor, generator and battery fan; plugs, wire, switch, carburetor, tools, etc.



Left Side of the W-S-M Truck and Tractor Engine



View From the Bottom and Timing Gear Section, Showing Driving Members, Pump Arrangement and Gears



Removable Cylinder Walls Permit of Quick Repairs

Choice Business Opportunities Now Open

On the radiator of every Acme is this seal of dependable performance.

Trade-Mark registered U. S. and other countries.

Learn About the Acme Dealer Franchise

For established dealers and other responsible business men, in localities where we have not yet granted the Acme Franchise, we have a big, important message.

The Acme Franchise embodies the most valuable business-building co-operation ever known in truck selling. It outlines a help-the-dealer program that covers every sales situation, from finding prospects to closing and financing.

The Acme Truck of Proved Units and Proved Construction is the specialized truck supreme. Its reputation and daily performance assure easy salability and certain satisfaction. The nine Acme models meet every truck need. The company is strong financially—ready and able to give best backing to every Acme dealer.

If your territory is still open, we will, on request, give you particulars about the Acme Franchise, presenting in detail this remarkable business opportunity. If you are interested in securing exclusive Acme rights, we suggest prompt action. Why not write today?

Acme Motor Truck Company, 528 Mitchell St., Cadillac, Mich.

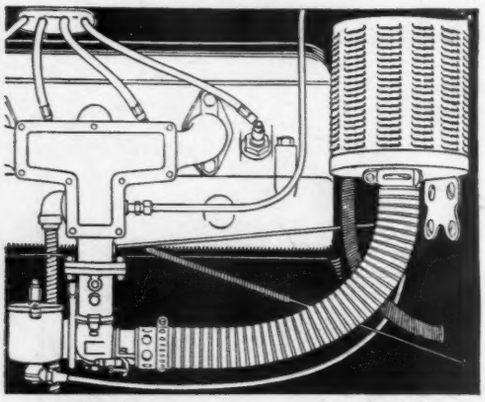
ACME

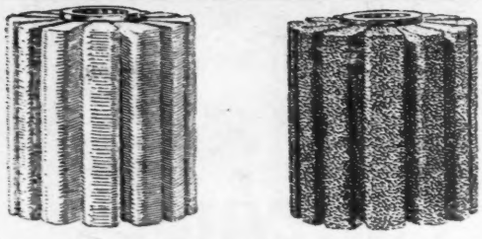
THIS SYMBOL IN ANY ADVERTISEMENT MEANS: SEE "CHILTON AUTOMOBILE DIRECTORY" FOR COMPLETE BUYING INFORMATION

Improved Staynew Filter for Engines

Most builders of motor vehicles have recognized for some time that road dust, sand and grit taken through the air intake of the carburetor and thence into the motor causes some wear, but the universal thought that is occasionally changing of gritty oil in the crankcase is all that is necessary to protect the engine. That this practice materially prolongs life is true but before the dust, sand and grit gets into the crankcase, damage to the engine has already been done.

In the first place there is more sand and grit in the air than is generally believed.





Above: Showing Connection to the Carburetor Intake

All air must pass through the filter before entering carburetor or engine

Below: Views of Filter Before and After Installation

Not only the wind but the wheels of other vehicles and especially street cars moving at high speed set in motion enormous quantities of road dust, sand and grit which is driven by the motor fan directly into the region of the air intake to the carburetor. A four-cylinder motor with 5-in. bore and 7-in. stroke running at 1200 r.p.m. requires over 18,000,000 cu. in. of air an hour. It is, therefore, evident that without an efficient filter large quantities of road dust, sand and grit are carried into the motor even under the most favorable conditions.

Consider the piston of a motor as it moves down on the intake stroke receiving the air charged with dust, sand and grit. Here is a principal cause of worn and scored cylinders, pistons and piston rings, and as a result loss of compression, etc. Gritty oil also causes excessive wear on connecting rod and crankshaft bearings, wrist pins, timing gears, camshaft bearings and especially the cams.

While manufacturers know that filtering the air materially reduces wear on engines and eliminates much expense, filters have not been generally adopted until very recently.

Practical tests with a filter, manufactured by the Staynew Corp., Rochester, N.Y., have been made on over five hundred installations under the most trying conditions over a period of two years. The tests proved very satisfactory. A few changes in the nature of refinements have been made in the construction of the Staynew filter, although fundamentally it is identical to the one originally put on the market two years ago.

Scientists have shown mathematically and experiments have proved that the carrying capacity of a current of air as regards the weights of the particles carries directly as the sixth power of the velocity. This filter is designed in accordance with this scientific law and its great efficiency is due to the fact that the velocity of the air as it enters the filter shell is greatly reduced so that the larger particles of solid matter in the air are precipitated before entering the shell, also after the air enters the shell its velocity is further reduced to one-twentieth the velocity with which it enters the shell. In the vertical pockets within the shell still further precipitation takes place so that only the very finest particles are carried to the filtering material and as the air passes through the filtering material at less than 1 ft. per sec. it is thoroughly freed from all solid and abrasive matter.

The effective filtering area is over two hundred times the area of the air intake of the carburetor so that the intake velocity of the air to the filtering surface is only one two-hundredth part of the velocity of the air entering the carburetor. The velocity being so greatly reduced the dust, sand and grit is separated from the air mostly by gravity.

The air does not strike directly on the filtering material, but enters the shell at right angles to it and at so low a velocity that the dust rests lightly on the felt so that the accumulated dust itself is porous and readily permits the air to pass through it and for the same reason is easily shaken off by the vibration of the machine whence it is discharged through the openings in the bottom of the shell which makes the filter in practice self-cleaning.

The filter is made of aluminum, is small in size and weighs 1½ lbs.

The Petry Bus Heating System

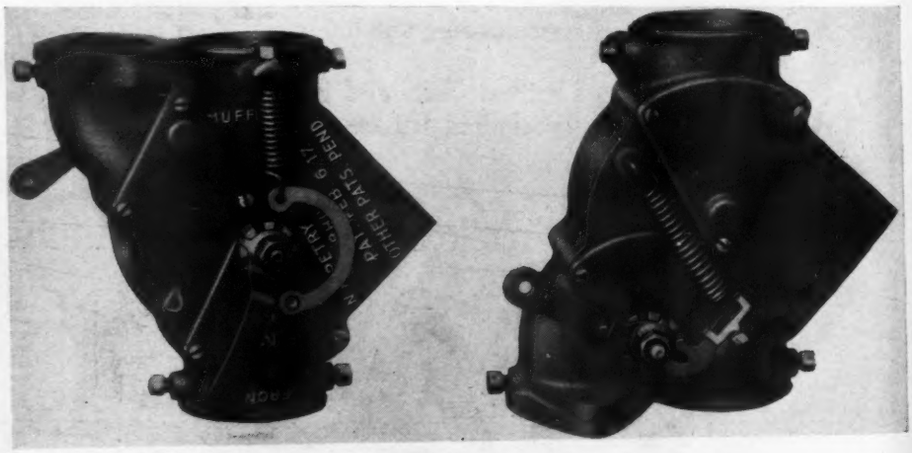
The new Petry bus heating system is designed and constructed so that maximum heat is extracted from the exhaust gases with minimum back pressure on the engine. The system is such that a greater radiating surface is afforded, thereby obtaining more heat than would be possible from unit heaters arranged under the seats. The fittings are made to suit conditions and the bends are of long radius permitting freer movement of the gases than possible with short, choking bends. This system is manufactured by N. A. Petry Co., Inc., Philadelphia, Pa.

A tuning-up valve is combined in the same housing with the heater valve so that poor ignition, faulty spark plugs, defective carburetor adjustment, etc., may be quickly determined. The valve is designed so that the exhaust gases from the engine are diverted at an easy angle into the heating system when the heating valve lever is turned through an angle. This lever position can be set and held in any one of three positions by a sprag which is provided with three notches.

The entire system is light in weight, light gage-steel tubing and malleable iron fittings being used throughout. Connections between the valves, bends and fittings are made by special compression couplings. The assembled system is claimed to be very effective and is said to be the only stock outfit of standard fittings, bends and unions that can be readily applied to varied types of bus bodies and chassis construction.

Adjustable valve hangers to support the valve and connections beneath the bus are also furnished. A special tee is used in the heating system to divert the gases to each side of the bus, and where the exhaust pipe is located only slightly below the chassis frame.

Clothing guards are used in combination with a special tubing hanger wherever the tubing is exposed. The design of the tubing guards and tubing hangers are such that where the bus has decidedly curved sides, practically no floor space is taken up by the guards. Asbestos covering for insulating the exposed outside tubing can also be furnished and cement for the insulation of the floor.



Two Views of the Left-hand Valve of the Petry System

Left: Showing lever for operating tuning-up valve. Right: Reverse side, showing lever for operating and controlling amount of heat desired